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Vol. III.

TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1922.

No. 93.

WEBSTER ELECTRIC COMPANY, PETITIONER,

vs.

SPLITDORF ELECTRICAL COMPANY.

WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

PETITION FOR CERTIORARI FILED JULY 31, 1922.

CERTIORARI AND RETURN FILED DECEMBER 13, 1922.

(29,070)

(29,070)

SUPREME COURT OF THE UNITED STATES.

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ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

VOLUME III.

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908 123—149
Number (Series of 1915). (Ex'r's Book) 105—22
2097 1915
Div. 28 Patent No. 1280105
Name Edmund Joseph Kane
Assr. by mesne assgts to Webster Electric Company, of Racine, Wis., a corp, of *(*West Virginia*) Wisconsin.
of Chicago
County of
State of Illinois
Invention Electric Igniters

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Attorney *(*Brown, Nissen & Sprinkle*
312 So. Dearborn St. Chicago Ill.)
2 *(*Associate*) Attorney Williams & Bradbury,
720 Monadnock Block, Chicago, Illinois.
V V
3 (No. of Claims Allowed 8) Title as Allowed Electric Igniter
(Cl. 123-149)
6—1618 Cls 1, 3, 5. V
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(In left-hand margin) Division of App., No. 541428, filed Feb 2, 1910 Pat #1204573
(Endorsed) Jan 27 1919

*Matter in italics in parentheses, stricken out in original transcript.

909 Frank T. Brown.
Charles M. Nissen.
Arthur L. Sprinkle.

Law Offices of
Brown, Nissen and Sprinkle,
Patent and Trades-Mark Law a Specialty.
Suite 1124 Monadnock Building,
312 S. Dearborn Street,
Telephone Harrison 292 Chicago,
Cable Address "Brohop" Jan. 11, 1915.

(Rubber stamp) $15. Received M Jan R 14 1915 Chief Clerk U. S. Patent Office.

The Commissioner of Patents,
Washington, D. C.

Sir:

Enclosed find papers and drawing for application for patent in the name of Edmund Joseph Kane for an Improvement in Electric Igniters, together with our check for $15.00 in payment of the filing Government fee thereon.

Very respectfully,
BROWN, NISSEN & SPRINKLE

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Enc.
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(Rubber stamp) Mail Room Jan 14 1915 U. S. Patent Office
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PETITION

To the Commissioner of Patents:

The petition of Edmund Joseph Kane, a citizen of the United States, residing at Chicago, in the County of Cook, State of Illinois, and whose Post Office address is 125 South Waller Street, Chicago, Ill., prays that Letters patent may be granted to him for the improvement in Electric Igniters, as set forth in the annexed specification.

And he hereby oppoints Brown, *(*Hopkins*), Nissen & Sprinkle, (a firm composed of Frank T. Brown, *(*Francis A. Hopkins*), Charles M. Nissen & Arthur L. Sprinkle, Registra-

*Matter in italics in parentheses, stricken out in original transcript.

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tion No. *(3119)), 1124 Monadnock Block, 312 So. Dearborn Street, Chicago, State of Illinois his attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign the drawings, to receive the Patent, and to transact all business in the Patent Office connected therewith.

Signed at Chicago, in the County of Cook, and State of Illinois, this 11th day of January, 1915.

(1) Inventor's signature EDMUND JOSEPH KANE.

(Documentary Internal Revenue stamp 25c canceled)

☞ Inventor must sign papers in three places.

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*(*SPECIFICATION.*)

To All Whom It May Concern:

Be It Known that I, Edmund Joseph Kane, a citizen of the United States, residing at Chicago, in the County of Cook and State of Illinois, have invented certain new and useful improvements in

Electric Igniters,

of which the following is a specification.

My invention relates to magneto generators for ignition systems of explosive engines, and this application is a division of my prior application for Electric Igniters for Explosive Engines, filed February 2, 1910, Serial Number 541,428.

The object of my invention is to provide a simple and efficient device of the character mentioned. A further object is to reduce wear and hammering of the electrical make-and-break contacts, and other parts of the generator.

My improvement consists in substantially the combination and arrangement of parts hereinafter described, shown in the accompanying drawing forming a part of this specification, and more particularly specified in the subjoined claims.

In the drawing:

(Fig.) 1 is a top view of a magneto generator, shown as attached to fragments of an explosive engine, and embodying my invention.

*Matter in italics in parentheses, stricken out in original transcript.

Fig. 2 is a section taken on line 2-2 of Fig. 1, but showing a larger portion of the cylinder of the engine than in Fig. 1,

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(Endorsed) Jan 27 1919

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912 and showing parts of the magneto cut away in broken lines; and,

Fig. 3 is a fragmentary view of a portion of the device taken as on line 3-3, in Fig. 1.

My invention is particularly adaptable to the type of magneto generators employing an oscillatory armature or inductor, and in connection with the make-and-break type of ignition systems.

In the drawing, an explosive engine 1, fragments of which are shown, is provided with a suitable opening for the ignition points of a make-and-break system, and around this opening, on the outer side of the cylinder wall, is an ignition block 8, provided with an extension 9 extending through said opening into the cylinder. At the inner end of the extension 9 is carried the fixed contact 10 of the make-and-break system. The electrode 10 is mounted in block 8 and insulated therefrom in the usual manner, such insulation not being shown. At the outer end of the contact member 10 is secured a conductor wire 11, between nuts 12 and 13.

On block 8 is an arm 14 having a bearing member 15 at its outer end. In the bearing member is journaled a shaft 16, which carries the armature or inductor 17. The inductor 17 rotates between the field-cores 18 and 19. The cores 18 and 19 are provided with suitable electrical windings and are formed on the pole pieces 20 and 21, and the latter are joined by fixed magnets 22 and 23. The pole pieces 20 and 21 are carried on ∧ *(*an extension 35 formed on the bearing member 15.*)*

insert B' (6)

per B 2097 4 913 One end of the conductor 11 is connected to or is *(a) part of the winding on pole-core 19, and the latter is connected to the winding on pole-core 18 in the usual manner, and is not specifically shown.

*Matter in italics in parentheses, stricken out in original transcript.

The other end 24 of the winding on pole-core 18 is
supporting block at the
per B secured to the *(*extension*) 25 *(*by a*) set screw
or other suitable fastening means
" " 25* ∧ to ground the circuit in the framework of the magneto. A movable contact 26 is adapted to co*(-)operate with fixed contact 10, and is provided with a portion extending through block 8, and in electrical contact therewith. On the outer
& beyond
" " end of the portion 26 which extends through ∧ block 8 is fixed an arm 27, and on the extended portion of part 26 is mounted a torsion spring 28 with one end engaging block 8, and the other end engaging
" " ∧ *(*resting on*) arm 27 in a manner to cause contacts 26 and 10 to normally remain in contact. In the free end of arm 27 is threaded an anvil 29. The
51 anvil is adjustably mounted in the free end of arm 27, so that timing of the engine may be varied slightly by such adjustments.

Secured on the shaft 16 is a yoke member 30, having two arms extending in opposite directions from shaft 16, with one of the arms 30 positioned at one end of anvil 29, and adapted, upon oscillation of shaft 16, to cause movement of the anvil to
" " open the con|tacts 26-10, as will be described later. The arms of member 30 are provided with lateral extensions which are connected to tension springs 31 and 32, said springs being secured at their other ends to brackets 33 and 34 on pole pieces 20 and 21, so that the tension of springs 31 and 32 normally maintains the arm member 30 in a position so that
" " in striking relation (2)
Insert B[1½] one of its arms is *(*closed*) to the anvil 29, ∧ On
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the member 30 is an actuating arm 35 adapted to be engaged by a plunger 36. The plunger 36 is
from
actuated /*(*by*) the crank shaft of the engine, not

---

†Matter in small type, inserted in red ink in original transcript.

shown. The end of plunger rod 36 which engages arm 35 is mounted on a flanged roller 38, and the latter journaled on an arm 37 formed on bearing member 15. The plunger 36 is provided with a wedged member or inclined cam surface on member 62, so that upon longitudinal movement of the plunger, the latter will engage arm 35 to oscillate member 30 and arm 35, and after riding on the cam surface will be raised from the arm 35, permitting springs 31 and 32 to restore member 30 to its normal position. Owing to the elasticity of springs 31 and 32 and the momentum of member 30, the latter will be carried slightly past its normal position, and engage anvil 29 and rock contact member 26 away from contact 10 to open the electric circuit. This opening of the circuit produces

Insert B² per B (53) ¶ the spark for igniting the engine. ^ The portion of member 30 which engages the bottom of anvil 29 is preferably rounded or curved, in order to effect uniform movement of the arm 27 during the time the member 30 is in contact with anvil 29. The field pieces and inductor are not shown in detail, since their specific parts are not part of this invention. Any suitable field pieces or inductor may be used, as desired.

While I have illustrated and described the preferred form of my invention, I do not desire to be limited to the precise details and arrangement set forth, but desire to avail myself of such variations and changes as may come within the scope of the appended claims.

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¶ I Claim:

1. In combination, a field magnet, an inductor mounted upon a shaft for oscillation relative to the field magnet, a yoke mounted upon the shaft for oscillation with the inductor, an operating arm carried by the yoke, a reciprocating member driven by an internal combustion engine to engage the operating arm to swing the yoke in one direction,

means for disengaging the reciprocating member from the operating arm to permit the oscillating parts to return to their normal position, spring mechanism connected with the diametrically opposite arms of the yoke, to return it to the normal position when relieved of the pressure of the reciprocating member, a curved cam surface on one arm of the yoke, a fixed electrical contact and a swinging electrical contact in the combustion chamber of the internal combustion engine, a spindle upon which the swinging contact is mounted, a push finger mounted upon the contact and spindle and carrying an anvil normally disengaged from the cam surface of the yoke but adapted to be engaged by the cam surface upon the overthrow of the oscillating yoke to separate the electrical contacts, and a light spring acting to bring the swinging contact and the push finger into their normal positions.

2. In a device of the class described, a suitable field magnet, an inductor adapted for oscillating with respect to the field magnet, a yoke rigidly connected with the inductor and having projections at diametrically opposite points, main actuating springs connecting the projections of the

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yoke with suitable stationary projections on the frame, the said actuating springs tending always to return the oscillating members to their normal positions, a pair of electrical contacts in the combustion chamber of an internal combustion engine, a light spring tending to maintain the closure of said electrical contacts, a push finger adapted when struck to separate the electrical contacts against the tension of the light spring, a curved cam surface on the yoke adapted to engage the push finger upon the overthrow of the yoke when returned to its normal position by the main actuating springs, an operating arm associated with the yoke, and reciprocating mechanism driven by the internal combustion engine to engage the operating arm to swing the yoke and the inductor out of their normal position.

3. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation with the field |magnet, a pair of main actuating springs, each connected at one end with the field magnet |frame, an integral yoke member rigidly connected with the inductor, the main actuating springs being connected at their free ends with the said yoke member, an operating arm constituting a part of the integral yoke member and adapted to be engaged by a reciprocating member driven by an internal combustion engine, separable contact points within the combustion chamber of the internal combustion engine, a light spring tending to maintain the closure of the electrical contacts, and mechanism adapted to be en-

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gaged by a cam surface on the yoke member to cause the separation of said contacts in opposition to the tension of the said light spring.

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4. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation therein, spring mechanism tending to return the inductor to its normal position when moved out of said normal position, an operating arm for turning the inductor out of its normal position, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod being adapted normally to engage the end of the inductor-operating arm, means for shifting the path of travel of the reciprocating rod to determine its engagement with the operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and a member fixed relative to the inductor adapted to effect the operation of said contacts to create an ignition spark within the combustion chamber of the engine.

5. In a device of the class described, a field magnet, an inductor mounted for oscillation therein, an operating arm for said inductor, a reciprocating

actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod adapted normally to engage the end of the inductor-operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine,

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and an impact member fixed relatively to the inductor adapted to separate said contacts to create a spark in the combustion chamber.

6. In a device of the class described, a field magnet, a shaft, an inductor mounted upon the shaft for oscillation relative to the field magnet, a yoke mounted upon said shaft for oscillation with said inductor, springs tending to retain the inductor and shaft in normal position, an engine-driven member for oscillating said shaft and parts carried thereby, separable electrical contacts within the combustion cylinder of the engine, and an impact member fixed relative to the inductor and shaft arranged to effect the separation of said contacts to create an ignition spark in the combustion chamber of the engine.

per D
*(*Insert* *A*[1])
(Insert C[1])>

(Cls 7-8)

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In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 11th day of January, A. D. 1915.

(2) Edmund Joseph Kane.

Witnesses:
Arthur L. Sprinkle,
Thomas Colson.

OATH

County of Cook, } ss.
State of Illinois. }

Edmund Joseph Kane, the above named petitioner being duly sworn (affirmed), deposes and says that he is a citizen of the United States and resident of Chicago, in the County of Cook, and State of Illinois; that he verily believes himself to be the original, first, and sole inventor of the improvement in Electric Igniters, described and claimed in the foregoing specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States.

(3) Inventor's signature EDMUND JOSEPH KANE.

Sworn to and subscribed before me this 11th day of January, A. D. 1915.

CHARLES H. SEEM
Notary Public.

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Notarial
Seal
Required

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Div. 28 Room 63

15-5

Paper No. 2

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

RYH

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington

March 24, 1915.

(Rubber stamp) U. S. Patent Office, Mar 24 1915 Mailed.

Brown, Nissen & Sprinkle,
312 So. Dearborn St.,
Chicago, Ill.

Please find below a communication from the Examiner in charge of the application of Edmund Joseph Kane, S. No. 2097, filed Jan. 14, 1915, Electric Igniters.

THOMAS EWING
Commissioner of Patents.

This case has been examined.

Claim 6 is rejected upon
Weber, 820,535, May 15, 1906 (123-149 s).

The remaining claims are allowable, as at present advised.

Applicant's attention, however, is directed to
Podlesak, 1,098,052, May 26, 1914 (123-149 s), and
Podlesak, 1,055,076, Mar. 4, 1913 (123-149 s),
as these may have bearing upon applicant's case.

BENSON,
Examiner.

HHG
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921 (Rubber stamps) Mail Room Apr 17 1915 U. S. Patent Office. U. S. Patent Office, Apr 19 1915 Division XXVIII.

IN THE UNITED STATES PATENT OFFICE.

Division 28, Room 63,
Edmund Joseph Kane,
Electric Igniter,
Filed January 14, 1915,
Serial No. 2097.
The Commissioner of Patents,
Washington, D. C.
Sir:—

In the above entitled application, and in response to the office letter of March 24, 1915, please amend as follows:—

Add the following claims:—

*(7. *The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an*
*(A¹) *arm connected therewith, spring means tending to*
pr D *hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.*

8. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the

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rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

9. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable

*Matter in italics in parentheses, stricken out in original transcript.

electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

10. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

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11. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

12. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to

*Matter in italics in parentheses, stricken out in original transcript.

hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

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13. The combination of an igniter fromc, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

14. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode, adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

15. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means

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tending to hold the rotor in a predetermined posi-

•Matter in italics in parentheses, stricken out in original transcript.

tion, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.)

Insert C[1]>

Remarks.

The six claims in this application as filed are the claims allowed in the Milton patent No. 1,096,048, granted May 12, 1914, and applicant desires that an Interference with Milton be declared by the office as soon as practicable.

Applicant notes that the Examiner has rejected claim 6 upon the Weber patent No. 820,535. It must be admitted that at first glance the language of this claim may be thought readable upon the Weber construction, but the claim is considered to be allowable to applicant for the same reasons that it was allowed to Milton, as Milton's structure is identical with that of applicant's, and as the present application is filed as a division of applicant's Serial No. 541,428, filed February 2, 1910, applicant appears to have priority over Milton with re-

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spect to filing dates, and desires to contest the claims of the Milton patent in Interference.

Regarding claim 6, which the Examiner has thought met by Weber, attention is called to the fact that this claim specifies "a yoke mounted upon said shaft for oscillation with said inductor." It can hardly be said that Weber has a yoke. A yoke in its ordinary significance means a member that joins two parts or things together, and the part 30 of the Kane application to each of the end branches of which the springs 31, 32 are attached, is properly described as a yoke. This is

[1]Matter in italics in parentheses, stricken out in original transcript.

also true of the member 15 having the lateral branches 16 comprising the yoke of the Milton patent No. 1,096,048 (See Figs. 1 and 4).

Referring now to the Weber construction, we fail to find a yoke in this sense. The only part that compares with applicant's yoke and the Milton yoke, is the radially extending arm 40, which is simply a lever secured to the shaft 15. The lever 40 does not have extension beyond the shaft 15, unless perchance the Examiner has noticed the impact member 41. Attention is called to the fact that the arm 41, however, is not a part of any yoke, because there is no spring secured to the arm 41, nor is there any connection leading therefrom to another spring, as in the Milton device, and in applicant's device.

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Furthermore, what is of still greater importance is that claim 6, as drawn, specifies also "springs tending to retain the inductor and shaft in normal position." Weber does not show this structure, but it is one of the characteristic features of applicant's construction, and also that of Milton, because there are springs connected to each of the two branches of the yoke, constantly under tension, or under tension at all times, and tending to retain the yoke and the inductor and the shaft carrying the same, in normal position.

If we look at the Weber construction, we see that he does not have springs tending to hold the arm 40 and the inductor and its shaft in normal position, but he has a single spring 50 coiled around the reciprocating rod 39. This spring 50 must serve the double function of a compression and tension spring, being alternately under tension and compression. This is one of the disadvantages of the Weber construction, as no spring will be entirely satisfactory which must be subjected to alternate compression and tension strains. It is well known that a spring under such conditions is more apt to crystallize and break when subjected to alternate tension and compression strains than when subjected to only one character of strain or work.

For these reasons, it is thought that claim 6 distinguishes the Milton and applicant's constructions over that of Weber, and allowance of the claim to applicant is requested.

Applicant has noted the Examiner's reference to the Pod-
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lesak patents, No. 1,098,052 and 1,055,076. Applicant also notes that the patent No. 1,055,076 was re-issued as Re-issue No. 13,878, of February 9, 1915. A careful consideration of the claims of the re-issue patent would indicate that claims 13 to 15, inclusive, and claims 19 to 24, inclusive, read equally as well upon applicant's structure as upon the structure shown in the Podlesak patent. As applicant's original application, of which the present application is a division, was filed long prior to the filing date of the original, applicant has incorporated these claims in the present amendment, and asks that they be entered, and that an Interference with Podlesak, as well as with Milton, be declared as soon as practicable.

Respectfully submitted,

BROWN NISSEN & SPRINKLE,
Attorneys for Applicant.

Chicago, Illinois,
April 14, 1915.
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(Rubber stamps) Mail Room May 10 1915 U. S. Patent Office U. S. Patent Office, May 11 1915 Division XXVIII.

IN THE UNITED STATES PATENT OFFICE.

Division 28, Room 63,
Edmund Joseph Kane,
Electric Igniter,
Filed January 14, 1915,
Serial No. 2097.
The Commissioner of Patents,
Washington, D. C.

Sir:

>Supplementing my amendment of April 14, 1915, I am enclosing a supplemental oath referring to the claims in this case.

Respectfully submitted,
EDMUND JOSEPH KANE
By BROWN NISSEN & SPRINKLE
Attorneys.

Chicago, Illinois,
May 8, 1915.
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930 IN THE UNITED STATES PATENT OFFICE.

(Rubber stamps) Mail Room May 10 1915 U. S. Patent Office U. S. Patent Office, May 11 1915 Division XXVIII.
Div. 28, Room 63,
Edmund Joseph Kane,
Electric Igniter,
Filed January 14, 1915.
Serial No. 2097.

SUPPLEMENTAL OATH.

State of Illinois, }
County of Cook, } ss.

EDMUND JOSEPH KANE, the applicant of the application for Letters Patent above identified, being duly sworn, deposes and says that the subject-matter of the fifteen claims now in this application which includes the six original claims and the nine claims numbered 7 to 15 inclusive, submitted in his amendment dated April 14, 1915, and responsive to Office action of March 24, 1915, was part of his invention, was invented before February 2, 1910, the filing date of his original application, Serial No. 541,428, of which the above identified application is a division, was not known or used before his invention, was not patented or described in a printed publication in any country more than two years before February 2, 1910, was not patented in a foreign country on an application filed more than twelve months before February 2, 1910, was not in public use or on sale in this country more than two years before the date of his said original application, and has not been abandoned.

EDMUND JOSEPH KANE.

Sworn to and subscribed before me this 7th day of May, 1915.

THOMAS COLSON
Notary Public.

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931 2—260

Div 28 Room 63
Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

Paper No. 5
All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

RYH
(Rubber stamp) U. S. Patent Office Aug 6 1915 Mailed.

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington

Aug. 6, 1915.

Brown, Nissen & Sprinkle,
312 So. Dearborn St.,
Chicago, Ill.

Edmund Joseph Kane, S. No. 2097, filed Jan. 14, 1915, Electric Igniters.

Case considered as amended April 17, 1915.

An interference will be declared between applicant and patent to Milton, 1,096,048, granted May 12, 1914, on claims 1 to 6 of applicant.

Claims 7 to 15, inclusive, which were made by applicant for the purpose of obtaining an interference with Podlesak, are rejected as lacking foundation. It is noted in this respect that each of the claims 7 to 15 includes in various terms "an arm on the rotor, an arm on said movable electrode adapted to engage with the first mentioned arm, and spring means for holding said arms in engagement".

It will be noted from applicant's statement respecting the mode of operation of his device that in his structure these arms are not normally in contact, being only in contact when the magneto rotor is carried past the normal position on the return stroke by inertia. See lines 14 and 15, page 4 of applicant's specification.

Applicant's make-and-break contacts are therefore normally in contact and open upon the return stroke of the magneto.

In Podlesak, it will be noted that the arms being in normal contact, his make-and-break contacts are normally operated

are only closed momentarily when the rotor reaches the end of its motion just prior to release.

In last line, page 3 of applicant's specification, "closed" should read close.

BENSON
Examiner.

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Forwarded from Div. 28
Examiner of Interfernces.

Paper No. 6
[Interference.]

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C.

Aug. 17, 1915.

(Rubber stamp) U. S. Patent Office, Interference Division
Aug 24 1915 Mailed

Brown Nissen & Sprinkle,
312 So. Dearborn St.,
Chicago, Ill.

Please find below a copy of a communication from the Examiner concerning the application of Edmund Joseph Kane, S. No. 2097, filed Jan. 14, 1915,—Electric Igniters.

Very respectfully,

THOMAS EWING
Commissioner of Patents.

Room No.....

Address only
The Commissioner of Patents
Washington, D. C.

39013

The case, above referred to, is adjudged to interfere with others, hereafter specified, and the question of priority will be determined in conformity with the Rules.

The statement demanded by Rule 110 must be sealed up and filed on or before Sep 27 1915 with the subject of the in-

vention, and name of party filing it, indorsed on the envelope. The subject-matter involved in the interference is

Count 1. In combination, a field magnet, an inductor mounted upon a shaft for oscillation relative to the field magnet, a yoke mounted upon the shaft for oscillation with the inductor, an operating arm carried by the yoke. a reciprocating member driven by an internal combustion engine to engage the operating arm to swing the yoke in one direction, means for disengaging the reciprocating member from the operating arm to permit the oscillating parts to return to their normal position, spring mechanism connected with the diametrically opposite arms of the yoke, to return it to the normal position when relieved of the pressure of the reciprocating member, a curved cam surface on one arm of the yoke, a fixed electrical contact and a swinging electrical contact in the conbustion chamber of the internal combustion engine, a spindle upon which the swinging contact is mounted, a push finger mounted upon the contact and spindle and carrying an anvil normally disengaged from the cam surface of the yoke but adapted to be engaged by the cam surface upon the overthrow of the oscillating yoke to separate the electrical contacts, and a light spring acting to bring the swinging contact and the push finger into their normal positions.

Count 2. In a device of the class described, a suitable field magnet, an inductor adapted for oscillating with respect to the field magnet, a yoke rigidly connected with the inductor and having projections at diametrically opposite points, main actuating springs connecting the projections of the yoke with suitable stationary projections on the frame, the said actuating springs tending always to return the oscillating mem-

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933 —2— (Kane, 2097).

bers to their normal positions, a pair of electrical contacts in the combustion chamber of an internal combustion chamber of an internal combustion engine, a light spring tending to maintain the closure of said electrical contacts, a push finger adapted when struck to separate the electrical contacts against the tension of the light spring, a curved cam surface on the yoke adapted to engage the push finger upon the overthrow of the yoke when returned to its normal position by the main actuating springs, an operating arm associated with the yoke, and reciprocating mechanism driven by

the internal combustion engine to engage the operating arm to swing the yoke and the inductor out of their normal position.

Count 3. In a device of the class described, the combination of a field magnet, an inductor for oscillation within the field magnet, a pair of main actuating springs, each connected at one end with the field magnet frame, an integral yoke member rigidly connected with the inductor, the main actuating springs being connected at their free ends with the said yoke member, an operating arm constituting a part of the integral yoke member and adapted to be engaged by a reciprocating member driven by an internal combustion engine, separable contact points within the combustion chamber of the internal combustion engine, a light spring tending to maintain the closure of the electrical contacts, and mechanism adapted to be engaged by a cam surface on the yoke member to cause the separation of said contacts in opposition to the tension of the said light spring.

Count 4. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation therein, spring mechanism tending to return the inductor to its normal position when moved out of said normal position, an operating arm for turning the inductor out of its normal position, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod being adapted normally to engage the end of the inductor-operating arm, means for shifting the path of travel of the reciprocating rod to determine its engagement with the operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and a member fixed relative to the inductor adapted to effect the operation of said contacts to create an ignition spark within the combustion chamber of the engine.

Count 5. In a device of the class described, a field magnet, an inductor mounted for oscillation therein, an operating arm for said inductor, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod adapted normally to engage the end of the inductor-operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and an impact member fixed relatively to the inductor adapted to separate said contacts to create a spark in the combustion chamber.

Count 6. In a device of the class described, a field magnet,

a shaft, an inductor mounted upon the shaft for oscillation relative to the field magnet, a yoke mounted upon said shaft

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934 (3)— (Kane, 2097).

for oscillation with said incudtor, springs tending to retain the inductor and shaft in normal position, an engine-driven member for oscillating said shaft and parts carried thereby, separable electrical contacts within the combustion cylinder of the engine, and an impact member fixed relative to the inductor and shaft arranged to effect the separation of said contacts to create an ignition spark in the combustion of the engine.

The interference involves your application above identified and

A patent (No. 1,096,048, May 12, 1914) for Magneto-Generator granted to John Lewis Milton, whose postoffice address is c/o Webster Electric Company, Tiffin, Ohio, and whose attorney is Lynn A. Wililams, Monadnock Block, Chicago, Ill.

The relation of the counts of the interference to the claims of the respective parties is as follows:

Counts:	Kane:	Milton:
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6

A R Benson
Examiner.

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935 2—079

INTERFERENCE.

Interference No. 39013 Paper No. 7
Name, Edmund Joseph Kane
Serial No. 2097
Title, Electric Igniters
Filed, Jan. 14, 1915
Interference with John Lewis Milton (Patent)

Decisions of

Primary Examiner,..... Dated,.....
Favorable—March 30/17 vacated *(*Sept. 6/16*) Sept. 29/16.
Ex'r of Interferences, *(*Adverse*) Dated.....
Board,..... Dated.....
Commissioner,..... Dated.....

Remarks:

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This should be placed in each application or patent involved in interference in addition to the interference letters by Primary Examiner.

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*Matter in italics in parentheses, stricken out in original transcript.

936 (Rubber stamps) Mail Room Aug 26 1915 U. S. Patent Office U. S. Patent Office Aug 27 1915 Division XXVIII.

IN THE UNITED STATES PATENT OFFICE.

Division 28, Room 63,
Edward Joseph Kane,
Electric Igniters,
Filed Jan. 14, 1915,
Serial No. 2,097.
The Commissioner of Patents,
Washington, D. C.

*(*Sir:—*

This communication is in response to the official letter of August 6, 1915.

Page 3 of applicant's specification, in last line, change "closed" to close.

not entered *Remarks.*

Applicant notes that the Examiner will, in due course, declare an interference between applicant and the patent to Milton, Patent No. 1,096,048, granted May 12, 1914, on claims 1 to 6 of the applicant.

The Examiner's attention is called to the fact that the patentee Milton was an employee of the Webster Electric Company, which is the party in interest in the Podlesak patent also. It is believed that the records of the Patent Office, Assignment Division, will also show that the Milton patent is assigned to the Webster Electric Company, and that the same records will show that the Webster Electric Company is the party in interest in the Podlesak re-issue.)

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937 The Examiner's attention is called to the enclosed circular put out by the Webster Electric Company, in which there is a cut on the inside of the first page containing the notice "Podlesak Patents," thus showing that the company which owns or controls the Milton patent is also the chief party in interest in the Podlesak patent. This being the case, the Examiner will see that the applicant would pre-

*Matter in italics in parentheses, stricken out in original transcript.

fer to determine definitely the question of the interference with Podlesak before the interference is formally declared between applicant and the patent to Milton. If further evidence is required by the Examiner, tending to show that the same parties are interested in both of these patents as opposed to the interests of applicant, such evidence will be given in the form of affidavits upon request, and it is hoped that the office will, for the reasons given, delay the declaration of interference between applicant and Milton until the question of the declaration of the Podlesak interference be determined.

The applicant and his attorneys have most carefully considered the Examiner's reasons as set forth in the letter of August 6th, in which the Examiner has rejected the claims made by applicant for the purpose of obtaining an interference with Podlesak, on the ground of "lacking foundation." Applicant is in entire accord with the Examiner with respect to the slight difference in the suggested mode of operation of applicant's device, and the suggested mode of operating the Podlesak device as set forth in the Podlesak specification, but applicant is likewise astounded that the Examiner should reject his claims made for the purpose of securing the inter-

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938 ference with Podlesak on the ground that there is a slight difference in operation, when the facts are in the first place that, structurally, Podlesak and applicant are identical. All it is necessary to do with the Podlesak device as shown and described in his patent to make it operate, just as applicant has described the preferred mode of operating his device, is to adjust the anvil or screw 35, which is shown threaded and adjustable in the arm 32, until points 3 and 4 of Podlesak (see Fig. 2) come together. Such an adjustment may cause the anvil 35 to be separated from the arm 31 of Podlesak during the period when the rotor is at rest, just as applicant has described the preferred adjustment and manner of operating his device. Now on the other hand, all that to make it operate like Podlesak, it is necessary to do with applicant's device ^ is to adjust the anvil or screw 29 downwardly toward the arm 30 until contact takes place when the rotor is in a state of rest, and since the spring 28 controlling applicant's movable electrode is of less resisting power than the springs of the rotor, obviously the effect of such an adjustment will be to separate the points

10 and 26 just as Podlesak states in his patent he prefers to operate his device. Now as a matter of fact, it matters not just how this anvil is adjusted, and the Kane specification states that it is intentionally made adjustable. On typewritten page 3, beginning at about line 15, it is stated that the anvil 29 is threaded, and "is adjustably mounted on the free end of arm 27, so that timing of the engine may be varied slightly by such adjustments." Of course the applicant did not go ahead and state that, by screwing this anvil down somewhat nearer the limit of its adjustment, he could cause the electrodes to remain out of contact when the rotor is in

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30 —3—

939 a normal position, if such a thing was desirable, and he supposed that anyone would know enough to do this when he had provided such an adjustment. The facts are that applicant does not prefer to have his device adjusted so that the points will remain normally separated, and in this connection we would call the Examiner's attention to the fact that it appears that even Podlesak himself does not desire to have the anvil of his device so adjusted that the electrodes will remain separated when the rotor is at rest. As proof of this, applicant calls the Examiner's attention to the enclosed circular of the Webster Electric Company, which controls the Podlesak patents and manufactures under them, as will be seen by the notice on the cut on the inside of this circular, and as stated on the third page of the circular where we have underlined it in ink. On the third page of this circular the Examiner's attention is called to the paragraph we have designated by the reference character "Z," as follows: "Igniter points which remain closed at all times except when spark is made, preventing moisture by particles of carbon collecting on them. Hammer blow in opening the points, which gives greatest spark efficiency."

Now the applicant has carefully examined the Podlesak claims, and cannot agree with the Examiner that claims 13 to 15 inclusive, and claims 19 to 24 inclusive, which applicant has made in his case as Nos. 7 to 15 inclusive, are limited to any such feature as the Examiner would imply from the language in the last letter.

Applicant contends that he was the prior inventor of this structure, and he will offer proof of this when the opportun-

ity presents itself, and will attempt to show that he made this
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31 —4—
940 invention years prior to the filing of the first Podlesak application upon which this re-issue was based, and that Podlesak was in the employ of the Webster Electric Company, where applicant made his invention, and that Podlesak knew of this invention because it was communicated to him by applicant. Under these circumstances, therefore, it will be seen that if applicant is denied making these claims on his prior structure, he will be put in the position of having Podlesak later contend that applicant's structure is an infringement of these claims of Podlesak. Applicant has, with his counsel, carefully considered these claims, and is advised by counsel that these claims 7 to 15 inclusive which he has made, do, in fact, read upon his structure. In other words, applicant contends, and is advised by his counsel, that it is not necessary that his anvil shall be adjusted to the position of the anvil shown in the Podlesak patent in order that his structure may be responsive to these claims. Taking up the claims seriatim, it will be seen that every element of claim 7 (Podcombined
lesak 13) ∧ and co-operating for the purposes set forth in the claim, is found in applicant's construction. The "relatively fixed and movable electrodes" 3 and 4 of Podlesak are responded to by the fixed and movable electrodes 10 and 26 of applicant. "An arm on the movable electrode," which is the arm 32 of Podlesak, is the arm 27 of applicant. "A generator having a rotor" is found in the rotor 17 of applicant, which functions exactly as the rotor 20 of Podlesak. "An arm connected therewith," which is the arm 31 of Podlesak, is the arm 30 of applicant. "Spring means tending to hold the motor in a given position," which is Podlesak 23, is responded
by
to ∧ either spring 31 or 32 of applicant. "Spring means of
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941 less tension than the first mentioned means and operating on the first mentioned arm to hold the same in en-
is spring 33
gagement with the second mentioned arm," ∧ which tends to draw the arm 32 of Podlesak toward the arm 31 attached to

and
the rotor, ∧ is found in applicant's construction in spring 28, which normally presses the arm 27 toward arm 30, rigidly secured to the rotor. This would seem to be the only element upon which there could be the slightest quibble, and surely the Examiner does not mean to contend that the spring 28 of applicant does not hold the arm 27, and its anvil thereon, in engagement with the arm 30 which moves with applicant's rotor. It is true that applicant shows the anvil so adjusted that there is a slight gap between the arm 30 and the anvil of the arm 27 when the rotor is perfectly at rest, but the language of claim 7, corresponding to claim 13 of the Podelsak patent, is not limited to a construction in which the arm of the movable electrode is held in contact with the arm on the rotor all the time. It will certainly be sufficient to meet the terms of this claim if this spring functions so as to hold the arm on the movable electrode in engagement with the rotor at any time. Let the Examiner stop and think for a moment what is the function of this light spring 28. Is it not to rotate the movable electrode, and cause the arm 27 to be resiliently sustained and resiliently supported in the direction of the strike arm 30 of the rotor? Insofar as this claim is concerned, it is immaterial whether the points of the electrode rest together when the rotor is at rest, and so resist the action of the comparatively weak spring, or whether the parts be so adjusted as Podlesak shows them in Fig. 3 of the drawing of his re-issue patent, and the arm of the movable elec-

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33 —6—

942 trode contact with the arm on the rotor before the points come together, thus holding the points normally slightly separated at the time that the rotor is at rest.

The Examiner's attention is called to the fact that, electrically speaking, there is no difference in the operation of these devices, whether the anvils or screws be adjusted so that the gap is between the points of the electrodes when the rotor is at rest, as Podlesak indicates the adjustment in his re-issue patent, or whether the anvils be adjusted so that the gap will take place between the strike arm on the rotor and the anvil on the arm of the movable electrode with the points in contact when the rotor is at rest. It is submitted that it is incorrect for the Examiner to infer that Podlesak's claims

are limited to the adjustment that he shows of his parts with the arms "in normal contact." If there is any such limitation as this in claim 13 of Podlesak, which is claim 7 of applicant, the Examiner is respectfully asked to point it out. Finally in considering claims 7 to 13, the Examiner's attention is called to the fact that the element called a trip device, for actuating the rotor, is found in applicant's device just as in Podlesak's and as to this element it is believed there is no dispute.

It is not thought necessary to take up the remainder of the claims in detail, except to say that the only possible element of claim 8, which is claim 14 of the Podlesak patent, about which there can be any contention by the Examiner, is the element "spring means of less tension than the first mentioned means and operating on the first mentioned arm to hold the same in engagement with the second mentioned

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943 arm." Analyzing this element, it will be seen that applicant's spring 28 is the weaker spring of the two sets of springs, and it operates on the movable electrode arm to hold the same in engagement with the second mentioned arm. The Examiner cannot deny this, because as soon as the trip device operated by the engine, moves the arm on the rotor against the action of the rotor controlling springs, the rotor will return when released, and regardless of how the anvil or screw may be adjusted, the parts will be in contact, and the light spring on the movable electrode will hold the parts in engagement during the rebound or return of the rotor. In this respect the Kane device responds completely to the language of this claim 8, as it does to claim 7, because there is not a word said in the claim that would tend to limit the time that this engagement is to take place, and since it is a positive engagement between the two parts during the return movement of the rotor, it is thought there can be no question but that this claim reads as well upon applicant's device as upon the device of the Podlesak patent, which latter is, in fact, applicant's device.

As supporting applicant's contention, the Examiner's attention is called to claim 15 of the Podlesak patent, applicant's claim 9, which, it is understood, the Examiner has also rejected. The language of the element of this claim under consideration is: "a spring tending to hold the arm of the

electrode into engagement with the arm of the rotor." Surely the Examiner will not contend that the light spring on the movable electrode of Kane does not "tend" to hold the arm of the electrode into engagement with the arm of the rotor, although there may be part of the time that this tendency does not cause the complete engagement of the parts. It is sub-

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944 mitted that the language of this claim is satisfied when this tendency is sufficient to bring the parts into engagement during a portion of the movement of the parts. In fact, applicant will go even further, and states that it is believed his construction would satisfy the language of this claim even though the arm on the rotor and the arm on the movable electrode never touched each other, if the parts could be so adjusted as to be operated in this way, which, of course, is an absurdity, but no more absurd than the Examiner's position appears to the applicant in holding that these claims have no foundation in applicant's disclosure.

Referring to claim 19, which is claim 10 of applicant, the element "spring means of less tension than the first mentioned means, operating on the first mentioned arm to hold the same in engagement with the second mentioned arm" is certainly found in the relatively weak spring 28 of applicant, which unmistakably holds the electrode arm in engagement with the arm on the rotor during the return movement of the rotor, or at least, during a considerable portion of that movement. This spring holds the parts together as they move together to separate the points of the electrode, and prevent the too rapid separation of the electrodes; and also this spring insures the return of the electrodes together upon the release of the arm on the rotor. It is not thought necessary to quote more than a small portion of this same language applicant's No. 11,

found in claim 20, ^ referring to this same "spring means operating on the first mentioned arm to hold the same in engagement with the second mentioned arm." This is believed to be as completely responsive to applicant's construction as to the construction of Podlesak for the reasons stated.

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945 applicant's claim 12,

The Examiner will notice that claim 21, ^ referring to the spring, uses also the word "tending," and for reasons already stated in connection with the discussion of claim 15, it is submitted this claim should be indicated as allowable to applicant. Claims 22 and 23 of Podlesak, applicant's claims 13 and 14, both contain the language: "an arm on said movable electrode adapted to engage with the first mentioned arm." Of course this is found in applicant's device just as in the Podlesak device, because applicant's electrode arm is as much adapted to engage the arm on the rotor as is Podlesak's. In fact, that is the purpose for which it was designed, just as Podlesak's arm was designed for that purpose. Claim 13 has the element: "spring means for bringing the said two arms into engagement," and this is the light spring which brings the arm of the movable electrode normally to a position, and holds it in that position where the arm on the rotor can engage it; and furthermore, this light spring on the movable electrode holds the arm thereon in engagement with the arm on the rotor during the combined return or rebound movement of the rotor arm, thus showing conclusively that this spring is the means for bringing the two arms into engagement regardless of how the anvil or screw may be ad-

Podlesak 23,

usted. The language of claim 14 ^ in this respect is identical with the language of claim 13, and the language of claim Podlesak 24,

15 ^ in this respect is similar.

Reconsideration and allowance of these claims of applicant is requested.

If the Examiner has any difficulty in understanding the mode of operation of applicant's device as explained in connection with the claims above discussed, or if the Examiner is

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946 unable to agree to the fullest extent with applicant's position in this matter, applicant requests that the Examiner accord him an opportunity to appear in his presence with his attorney for a hearing in regard to this matter, when a model or full-sized device of the Kane magneto may be produced and operated, and compared with the structure of the Podlesak patent, which latter may also be presented in the

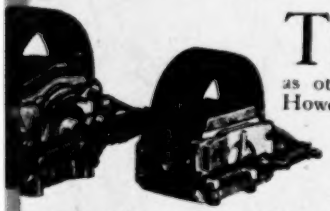
form of a model or full-sized device if the Examiner so desires.

Respectfully submitted,

BROWN NISSEN & SPRINKLE
Attorneys for Applicant.

Chicago, Illinois,
August 23, 1915.
2097
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he Wonderful New Type "K



THE WEBSTER TYPE "K" magneto is of the oscillating type and embodies the same principle as other WEBSTER MAGNETOS. However, it differs in construction and is also considerably smaller. This machine was designed especially for engines of one, two and three horse-power. The WEBSTER MAGNETO is an innovation in magneto field in view of the fact that it is sold complete with hments ready to put on the engine. This feature in the smaller neto, Type "K", will be a big help to engine manufacturers, their ers, dealers and the ultimate purchaser. It might be said here that Webster Company is the only concern which can furnish a complete ion outfit ready to put on an engine.

BSTER MAGNETOS are reasonable in price, especially Type "K", was produced so that manufacturers who find it necessary to equip smaller engines with magnetos can do so and have the very best on apparatus.

WEBSTER Type "K" was made possible by the use of the eak patents, the main principle being a tripolar arranged field with r-pole inductor. With this construction very little motion is ary to operate the magneto so as to obtain an extremely hot spark. rushes, moving wires or collector rings are used, so that the machine is thoroughly water, weather and oil proof. This in itself assures the operator of the engine that he will have a spark under all conditions. Although these features are the leading ones covered by the Podlesak patents, there are numerous others which aid toward the easy handling of an engine.

SPECIFICATIONS:

MAGNETS are of the highest grade Tungsten steel and made in the Webster factory.

SHAFT is one piece, ½ inch diameter, and ground to size.

INDUCTOR is made of laminated special electric steel and riveted electrically. It is keyed to the shaft by a Woodruff key and cannot possibly shift.

POLE PIECES are made of laminated special electric steel and riveted electrically.

BEARINGS are bronze and lubricated by capillary attraction.

SPIDERS are of bronze.

PUSH FINGER and SPRING ARM drop forged tool steel.

COILS are stationary and are wound of cotton and enamel insulated wire and after being thoroughly processed in insulating varnish are taped and processed again before putting into the machine.

PLUG: By years of experience the Webster Company have proven to the world that mounting the magneto on a bracket which is a part of the igniter plug is the best and simplest practice. The WEBSTER plug is thoroughly covered by patents and we list herewith some of its features:

Three point suspension which allows for the removing and replacing of the plug without changing the timing of the magneto on the engine.

Igniter points which remain closed at all times except when spark is made, preventing moisture or particles of carbon collecting upon them.

Hammer blow in opening the points which gives greatest spark efficiency.

Positive coil spring which makes it extremely difficult for the movable electrode to stick.

The WEBSTER MAGNETO can be truthfully called the "Crankless Engine Starter" and is equipped with a starting lever which is used to trip the magneto by hand. This feature is used on all types of the WEBSTER line.

WEBSTER MAGNETOS have no moving wires, brushes or rubbing contacts and are not affected by oil or water.

he Webster Electric Co., Racine, Wisconsin, U. S. A.

947
948 (Rubber stamps) Mail Room Aug 26 1915 U. S. Patent Office U. S. Patent Office, Aug 27 1915 Division XXVIII.

The Webster Electric Company

Racine, Wisconsin

U. S. A.

Webster
—Tripolar—
Magneto
Crankless
Starter

July
Nineteen
Fourteen

Dear Sir:

On the following pages we take pleasure in presenting to you information about Webster Magnetos, principally, however, type "K".

If you will spend three minutes reading it, we believe you will find that it completely solves your ignition problem.

Yours truly,

THE WEBSTER ELECTRIC CO.
By S A LOEB
Vice Pres.

2097
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949

Serial No. 7097 Paper No. 9.
Doc

(Rubber stamps) Mail Room Sep 6 1915 U. S. Patent Office Docket Clerk Sep 8 1915 U. S. Patent Office

IN THE UNITED STATES PATENT OFFICE.

Re Application of
Edmund Joseph Kane,
Electric Igniters,
Filed January 14, 1915,
Serial No. 2,097.

Before the
Commissioner.

In view of the report of the Exr dated Sep 8 1915 the petition is Denied Sep 15 1915

THOMAS EWING
Commissioner of Patents.

PETITION.

To the Commissioner of Patents:

Your petitioner, the applicant in the above entitled application, avers—

First, that on or about August 24, 1915, claims 1-6 inclusive of this application were placed in interference with the patent No. 1,096,048, dated May 12, 1914, for Magneto-Generator, granted to John Lewis Milton, interference No. 39,013.

Second, that the Examiner of Interferences ruled that the statements *(in)* under Rule 110 in this case must be filed on or before September 27, 1915.

Third, that claims 7-15 inclusive of said application are still being prosecuted before the Examiner of Division 28, with a view of placing said claims 7-15 in interference with re-issue patent No. 13,878 for Current Generator and Igniters for Internal Combustion Engines, granted to Emil Podlesak.

Fourth, that the real party in interest in the Milton patent No. 1,096,048, and the real party in interest in the Podlesak re-issue patent No. 13,878, are one and the same party; namely, The Webster Electric Company, having offices

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950 and factories at Tiffin, Ohio, and Racine, Wisconsin.

Fifth, that if said Milton is given access to applicant's file wrapper and contents before claims 7-15 inclusive in said application are placed in interference with said Podlesak patent or otherwise disposed of, and an interference is declared later between said claims 7-15 and said Podlesak's re-issue patent, the party controlling the Podlesak patent, The Websted Electric Company, will be given access to the file wrapper and contents of applicant before said Podlesak files his statement under Rule 110, thereby defeating Rule 111, and exposing the filing date of applicant's original application, Serial No. 514,428, filed February 2, 1910, of which the above mentioned application is a division, to Podlesak before said Podlesak is entitled to it, to applicant's great injury.

Wherefore your petitioner requests—

First, that the time for filing the statement under Rule

*Matter in italics in parentheses, stricken out in original transcript.

110, and opening of Kane's file wrapper and contents to Milton in interference No. 39,013, between Kane and Milton, be extended from month to month until claims 7-15 inclusive of the application above mentioned have been placed in interference with said Podlesak patent or otherwise disposed of, for the reasons mentioned.

Second, that the Examiner of Division 28 be instructed to act as promptly as possible on said claims 7-15 of the above mentioned application, in order to prevent unnecessary delay in the prosecution of interference No. 39,013 between Kane and Milton.

Oral hearing of this petition is hereby waived.

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Remarks.

It is not the purpose of this petition to delay the prosecution of interference No. 39,013 between Kane and Milton, but it is the purpose to facilitate the prosecution of claims 7-15 of applicant's application Serial No. 2,097, filed January 14, 1915, so that said claims will either be placed in interference with said Podlesak re-issue patent, or otherwise disposed of before applicant's record will be opened to said Milton, for the reason that Milton has licensed The Webster Electric Company, of Tiffin, Ohio, and Racine, Wisconsin, to manufacture Electric Generators under his patent, and that said Podlesak has also licensed said The Webster Electric Company to manufacture Electric Igniters under his patent. It is therefore obvious that, if applicant's record is thrown open to Milton, Podlesak will be apprised of applicant's original filing date before he is entitled to the same.

Soon after the time that applicant made his invention set forth in the above referred to application, he disclosed the same to John L. Milton, the patentee Milton above referred to, and Emil Podlesak, the patentee Podlesak above referred to, who were in the employ of The Webster Electric Company in the Experimental Department thereof. At that time The Webster Electric Company was not interested in this invention, for the reason that there was no demand yet for such Electric Igniters. After applicant had made a number of his Igniters, and showed the advantages thereof, said Milton ap-

*Matter in italics in parentheses, stricken out in original transcript.

plied for his patent, and licensed The Webster Electric Company to manufacture said Electric Igniters. Then later Podlesak made application for his patent, and also licensed The Webster Electric Company to manufacture under his patent.

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43 —3—

952 As evidence that The Webster Electric Company is manufacturing under both of these above mentioned patents, applicant is herewith submitting a catalogue published by The Webster Electric Company, entitled "Webster-Milton Low Tension Magneto." In this catalogue is shown a number of views which show applicant's construction very clearly. This catalogue also refers to the Milton patents. Applicant is also enclosing a catalogue published by The Webster Electric Company, entitled "Webster Magnetos." On the front cover of this catalogue is the picture of a Magneto with the words "Podlesak Patents, Simplest" indicated on the picture of the Magnetos. In this catalogue a number of references are made to the Podlesak patents, both on the cuts and in the reading matter. These catalogues show that The Webster Electric Company is the real party in interest in both of these patents, and it is urged that it would not be fair to Kane to have his record exposed to said The Webster Electric Company before an interference was declared between claims 7-15 of this case and the Podlesak patent above referred to, if applicant is entitled to such a declaration of interference on his record. It is therefore urged that Milton be not allowed to see applicant's file wrapper and contents until it is determined whether or not an interference will be declared between applicant's claims 7-15 in the above application and the reissue patent of Podlesak above mentioned.

To strengthen the contention that both Podlesak and Milton have licensed The Webster Electric Company, an affidavit of your petitioner will be forwarded within a few days, and before this case is reached for action, enumerating such facts as will show the above.

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44 —4—

953 Your petitioner is forwarding in this same mail a stipulation signed by the counsel for Kane and counsel for Milton, stipulating an extension of ten (10 days) for filing the statement under Rule 110 in interference No. 39,013. Your

petitioner will use every endeavor to co-operate in obtaining a disposal of claims 7-15 of his application, either by having these claims placed in interference with Podlesak or otherwise finally disposed of, in order to facilitate the prosecution of the questions in issue.

Respectfully submitted,

BROWN NISSEN & SPRINKLE
Attorneys for Kane.

Chicago, Illinois,
Sept. 1, 1915.
2097
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Serial No. 7097 Paper No. 10
Doc

(Rubber stamps) Docket Clerk Sep 7 1915 U. S. Patent Office Mail Room Sep 7 1915 U. S. Patent Office

IN THE UNITED STATES PATENT OFFICE.

Re Application of
Edmund Joseph Kane,
Electric Igniters,
Filed January 14, 1915,
Serial No. 2,097.

Before the
Commissioner
on Petition.

AFFIDAVIT.

EDMUND JOSEPH KANE, the applicant in the above entitled application, being duly sworn, deposes and says that he is informed and believes that The Webster Electric Company, having offices and factories at Tiffin, Ohio, and Racine, Wisconsin, and formerly having a factory and office at Chicago, Illinois, is manufacturing and selling Electric Igniters embodying his invention as disclosed in his application above referred to; that he is informed and believes that said The Webster Electric Company is manufacturing and selling said Electric Igniters under licenses given it by John L. Milton under U. S. Letters Patent No. 1,096,048, and Emil Podlesak under re-issue patent No. 13,878; that he has seen and examined Magneto Generators manufactured by The Webster Electric Company, which bore markings thereon purporting to give notice that such Magneto Generators were made and sold in accordance with said Milton patent, and *(*that*) other Mag-

neto Generators manufactured by The Webster Electric Company, which bore markings thereon purporting to give notice that such Magneto Generators were made in accordance with said Podlesak patent, all of which Magneto Generators embodied applicant's invention as disclosed in his application above mentioned; and that he disclosed his invention as set forth in the above entitled application to both John L. Milton and Emil Podlesak, the above named patentees, long before either Milton or Podlesak made application for their above mentioned patents, and while said Milton and Podlesak were in the employment of The Webster Electric Company, in the Experimental Department thereof, in an endeavor to interest The Webster Electric Company in affiant's invention.

EDMUND JOSEPH KANE.

Sworn to and subscribed before me this 3rd day of September, 1915.

R. J. MADILL,
Notary Public.

2097
My Commission Expires November 8th, 1917.
46

955 Address only
The Commissioner of Patents,
Washington, D. C.

Letter No. 11 & 12

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington

In re application of
Edmund Joseph Kane,
Serial Number 2097,
Filed Jan. 14, 1915,
Electric Igniters.

September 8, 1915.

Hon. Commissioner of Patents,
Sir:

Claims 7 to 15 of this application, which are identical with certain claims in Reissue Patent 13,878 to E. Podlesak, have been rejected on the ground that they lack foundation in this application as filed.

The structure disclosed in this application, by giving a sufficient range of adjustment to the "anvil 29" and by properly proportioning the spring 28 relative to springs 31 and 32, can be made to support the said claims. The specification, how-

ever, dose not disclose to what extent the "anvil" is adjustable; nor does it disclose the fact that the spring 28 is of less tension than springs 31 and 32. Since the application does not afford sufficient foundation for the claims in question, I think the proposed interference should not be declared.

Respectfully,

A. R. BENSON
Examiner.

Div. 28,
Room 36.
2097
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956 Address only
The Commissioner of Patents
Washington, D. C. LJB

Letter No. 13

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington

September 16, 1915.

In the matter of the
Application of
Edmund Joseph Kane,
Electric Igniters;
Filed Jan. 14, 1915,
Serial No. 2,097,
} Petition.

Sir:

You are hereby informed that the decision of the Commissioner on the above petition is as follows:

In view of the report of the Examiner, dated September 8, 1915, the petition is Denied Sep 15 1915

THOMAS EWING
Commissioner of Patents.

Enclosed herewith please find a copy of the Examiner's report.

By direction of the Commissioner:

Very respectfully,

Chief Clerk.
F.

Edmund Joseph Kane,
c/o Brown, Nissen & Sprinkle,
312 S. Dearborn Street,
Chicago, Ill.

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957 Serial No. 2097 Paper No. 14

V

(Rubber stamps) Mail Room Sep 20 1915 U. S. Patent Office U. S. Patent Office, Sep 21 1915 Division XXVIII.

IN THE UNITED STATES PATENT OFFICE.

Division 28, Room 63,
Edmund Joseph Kane,
Electric Igniters,
Filed January 14, 1915,
Serial No. 2097.

*(*The Commissioner of Patents,*
Washington, D. C.
Sir:—

The above entitled application is amended as follows:—

In the description, Page 4, line 14, cancel "and", first occurrence. Line 16, before "This",
Not entered *insert—Spring 28 is of less tension than springs 31 and 32, as clearly indicated in Fig. 2, so that contact 26 will be moved away from contact 10 against the influence of spring 28 by member 30 on the return movement of the latter given it by springs 31 and 32 as above mentioned.*

Same page, between lines 24 and 25, insert—

In some instances it is desirable to adjust the parts so that the contact 26 is normally out of engagement with contact 10. To make such an adjustment the anvil 29 is adjusted toward member 30 until arm 27 and contact member 26 are moved to separate contact 26 from contact 10. Since spring 28 is of less tension than springs 31 and 32, the latter springs will resist the force exerted by spring 28 on arm 27 and prevent contact 26 from engaging contact 10 while said parts are at rest or in their normal condition. This adjustment of said parts is not shown in the drawing since

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958 *it will be apparent from the adjustment shown, see particularly Fig. 2. When adjusted as just*

*Matter in italics in parentheses, stricken out in original transcript.

referred to, spring 28 will move contact 26 into engagement with contact 10 as soon as plunger 36 moves arm 35 and member 30 a short distance. The contacts will be held together by spring 28 until member 30 returns and engages anvil 29 of arm 27 to separate the contacts for forming a spark in the same manner as the first-mentioned the adjustment of ∧ parts.)

Remarks.

This application has been amended to overcome the objection made by the Examiner in his report of Sept. 8, 1915 to the Commissioner of Patents, on Petition. It is thought that this amendment will overcome said objections and provide sufficient foundation for claims 7 to 15 inclusive.

It is noted that in the description as originally filed, it is not specifically stated that spring 28 is of less tension than springs 31 and 32, but in the drawing spring 28 is shown as being made of considerably smaller material than either one of springs 31 and 32. Furthermore, in applicant's original application, Ser. No. 541,428, filed Feb. 2, 1910, of which the present case is a division, a description of the action of springs 28, 31 and 32 and their connecting parts is given on page 9 in lines 13 to 25 inclusive. In this original description it is not specifically stated that the spring 28 is of less tension than springs 31 and 32, but it states that member 30 is returned against the influence of spring 28. Since inertia is produced in member 30 by the action of springs 31 and 32, and such inertia causes spring 28 to yield to open the con-

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50 —2—

959 tacts, it necessarily follows that spring 28 must be of less tension than springs 31 and 32. It is therefore thought that this idea is sufficiently disclosed in the original description to merit the specific statement now presented in this amendment relative to the tensions of said springs.

The adjustment referred to in the second paragraph of the amendatory matter of this amendment, does not require formation of any of the parts different from that already shown. This adjustment simply consists in turning the anvil 29 in its

*Matter in italics in parentheses, stricken out in original transcript.

threaded connection of arm 27 until the lower end of the envil moves arm 27 and the shaft portion of member 26 to disengage the contact portion of member 26. It is an elementary proposition that applicant is entitled to such adjustments and uses as his device is capable of, and it is therefore urged that he is not setting up any new matter in the matter of the present amendment.

With the adjustment of applicant's device, which is clearly set forth in the second paragraph of the amendatory matter, presented herewith, applicant's device is directly readable on present claims 7 to 15 which are claims 13 to 15 and 19 to 24 inclusive of the reissue patent No. 13,878 dated Feb. 9, 1915, of Emil Podlesak. In view of this fact, it is urged that the interference between this application and the said Podlesak patent, be declared.

It is not thought necessary to add a new figure to the drawing showing the adjustment referred to in the present amendment, since such an adjustment is perfectly obvious from the disclosure of Figs. 2 and 3.

An affidavit executed by applicant is herewith enclosed

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960 setting forth the fact that the amendatory matter of the present amendment was part of his original invention.

Respectfully submitted,

BROWN NISSEN & SPRINKLE
Attorneys for Applicant.

Chicago, Ill.
September 18, 1915.

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961 14

(Rubber stamps) Mail Room Sep 20 1915 U. S. Patent Office U. S. Patent Office, Sep 21 1915 Division XXVIII.

IN THE UNITED STATES PATENT OFFICE.

Division 28, Room 16,
Edmund Joseph Kane,
Electric Igniters,
Filed January 14, 1915,
Serial No. 2,097

SUPPLEMENTAL OATH.

EDMUND JOSEPH KANE, the applicant in the above entitled application, being duly sworn, deposes and says that the subject matter of the amendment enclosed herewith and of even date with this oath, was part of his invention, was invented before he filed his original application for such invention, application Serial No. 541,428, filed Feb. 2, 1910, of which the above entitled application is a division, was not known or used before his invention, was not patented or described in a printed publication in any country more than two years before said original application, was not patented in a foreign country on an application filed more than twelve months before said application, was not in public use or on sale in this country more than two years before the date of said application, and has not been abandoned.

EDMUND JOSEPH KANE

Sworn to and subscribed before me this 18th day of September, 1915.

THOMAS COLSON
Notary Public.

(Seal)
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962 Serial No. 2097 Paper No. 15
DOC
39,013

(Rubber stamps) Docket Clerk Oct 6 1915 U. S. Patent Office Mail Room Oct 8 1915 U. S. Patent Office Denied Oct 9 1915 Thomas Ewing Commissioner of Patents.

IN THE UNITED STATES PATENT OFFICE.

In Re Application of
Edmund Joseph Kane,
Electric Igniters,
Filed Jan. 14, 1915,
Serial No. 2,097.
} Before The Commissioner.

(In left-hand margin) Recorded Vol. 118 Page 44. On the report of the Examiner of even date the petition is denied.

PETITION.

The Commissioner of Patents:

Your petitioner, the applicant in the above entitled application, avers—

First, that on September 1, 1915, he petitioned the Commissioner, requesting that the time for filing the statement under Rule 110, and opening of Kane's file wrapper and contents to Milton in interference No. 39013 between Kane and Milton, be extended from month to month until claims 7 to 15 inclusive of Kane's application might be placed in interference with Podlesak's re-issue patent No. 13878, or otherwise finally disposed of, and that the Examiner of Division 28 be instructed to act as promptly as possible on claims 7 to 15 inclusive of Kane's application in order to facilitate the prosecution of interference No. 39013, and set forth his reasons for such request.

Second, that on September 15, 1915, the Commissioner denied said petition, basing his denial on the Examiner's report dated September 8, 1915.

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963 Third, that on September 18, 1915, your petitioner amended his description to overcome the objections pointed out in said Examiner's report, and that said amend-

ment has not been acted upon by the Patent Office to the best of applicant's knowledge and belief.

Wherefore your petitioner requests that the statements under Rule 110 in the interference between Milton and Kane, No. 39,013, be kept sealed, and the file wrapper and contents of Kane's application in said interference be not exposed to the opposite party until after claims 7 to 15 inclusive of Kane's application be finally disposed of before the Primary Examiner in charge thereof.

Oral hearing on this petition is hereby waived.

Remarks.

Applicant amended his description to make it state positive features which would make claims 7 to 15 inclusive in applicant's application read as well on his application as on the Podlesak re-issue patent No. 13,878. Accompanying this amendment, in applicant's remarks he pointed out that the matter inserted by this amendment was inferentially set forth in the description and positively shown in the drawings in the original application, of which applicant's present application in said interference is a division. It is thought that this amendment will overcome any question of whether or not applicant's description discloses the subject matter of claims 7 to 15 inclusive in applicant's application in said interference.

2097 —2—
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964 The reason of applicant's request for having claims 7 to 15 inclusive of his application finally disposed of before the statement under Rule 110 and the file wrapper and contents of his applications are open to Milton, was clearly set forth in his petition, which was dated September 1, 1915, and the sworn statement of applicant executed September 3, 1915. With this amendment were also submitted two catalogues published by the Webster Electric Company, which is manufacturing devices under licenses from said Milton and said Podlesak. It is also noted, and is a matter of record, that the attorney for Milton is the attorney for Podlesak in their patents in question. For the above reasons it is requested that Kane's file wrapper and contents and statement under Rule 110 be withheld from Milton until claims 7 to 15 inclusive of applicant's appplication, Serial No. 2,097, be finally disposed of, so that Podlesak, his attorney of record and the Webster Electric Company, the party of interest in

the Milton patent, may not have access to applicant's record (Podlesak)
until he ∧ is entitled to same under Rule 111.

It is therefore urged that this petition be granted and such orders given as will bring about the request of this petition.

Respectfully submitted,

BROWN NISSEN & SPRINKLE,
Attorneys for Applicant.

Chicago, Illinois,
October 4, 1915.

2097
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965 2097 16

(Rubber stamp) Commissioner Received Oct 9 1915 of Patents.

IN THE UNITED STATES PATENT OFFICE.

In re application of
Edmund Joseph Kane,
S. No. 2097,
Filed Jan. 14, 1915,
Electric Igniters.

Before the
Hon. Commissioner of Patents,
on Petition.

EXAMINER'S STATEMENT.

Claims 7 to 15 of the above noted application were rejected Aug. 6, 1915, on the ground that they lacked foundation in the case as filed.

On Aug. 24, an interference involving the said application was declared.

On Sept. 8, 1915, by direction of the Commissioner, the said claims were reconsidered in view of certain arguments advanced by applicant. Said reconsideration, however, failed to change the examiner's opinion on the question of foundation.

On Sept. 20, 1915, applicant presented a proposed amendment to his specification; which amendment, according to office rules, has been placed in the file wrapper of the application, but not yet entered therein.

The proposed amendment and the arguments made in connection therewith have been considered by the examiner, and he is still of the opinion that the original specification does

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966 —2— (Kane, 2097).

not afford sufficient foundation for claims 7 to 15, inclusive.

ARB
Oct. 9, 1915,
Div. 28, Room 63.
Brown, Nissen & Sprinkle,
312 So. Dearborn St., Chicago, Ill.

A. R. BENSON
Examiner.

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967 290 444 17 & 18.
Address Only LJB Letter No.

The Commissioner of Patents
Washington, D. C.

DEPARTMENT OF THE INTERIOR
United States Patent Office
Washington

October 11, 1915.

In the matter of the
Application of
Edmund J. Kane,
Electric Igniters;
Filed Jan. 14, 1915.
Serial No. 2,097.

PETITION.

Sir:

You are hereby informed that the decision of the Commissioner on the above petition is as follows:

On the report of the Examiner of even date the petition is Denied Oct 9 1915

THOMAS EWING
Commissioner of Patents.

By direction of the Commissioner:
Very respectfully,

Chief Clerk,
F.

Edmund J. Kane,
c/o Brown, Nissen & Sprinkle,
312 South Dearborn St.,
Chicago, Ill.

2097
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968 Letter No. 19

Address Only
The Commissioner of Patents,
Washington, D. C.

DEPARTMENT OF THE INTERIOR,

United States Patent Office

Washington

October 18, 1915.

Hon. Commissioner of Patents,
Sir:

It is requested that jurisdiction of the application of E. J. Kane, Serial Number 2097, now involved in Interference No. 39,013, be restored to the Primary Examiner for the purpose of placing the same in interference with the reissued patent No. 13,878 to E. Podlesak.

Respectfully,

A. R. BENSON
Examiner.

Div. 28,
Room 63.
(Rubber stamp) Approved Oct 18 1915 J. T. Newton First Assistant Commissioner.
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(Rubber stamps) Mail Room Oct 18 1915 U. S. Patent Office U. S. Patent Office Oct 18 1915 Division XXVIII.

IN THE UNITED STATES PATENT OFFICE

Div. 28, Room 63
Edmund Joseph Kane,
Electric Igniters,
Filed January 14, 1915.
Serial No. 2097.

The Commissioner of Patents,
Washington, D. C.

Sir:

Conforming to the requirements of the Examiner having this application in charge, as expressed at an oral interview, on Saturday, Oct. 16, 1915, in regard to the official letter of August 6, 1915, rejecting claims 7 to 15 inclusive as lacking foundation and as further expressed in the Examiner's Reports of Sept. 8, 1915, and Oct. 9, 1915, on Applicant's petition to The Commissioner, the Applicant requests that the Amendment dated Chicago, September 18th, 1915, be entered in the following modified form:

Page 2, following the word "on" in line 3 from the bottom, erase the remainder of the sentence in this and the following line and insert the following:

V supporting block 25 which is secured by set screw 25ª to the bearing member or bracket on or in which the magneto generator is mounted, thus rendering B¹ the magneto generator proper, detachable from its roman firm supporting base, shelf or bracket formed integrally with ignition block or plug 8 as described.

2097
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V Same page, last line, change "a" to is.

970 No. 2097—2. 9121

V Page 3, line 4, change "extension" to supporting block.

V Line 5, change "by a" to at the, and after "25a"

insert or other suitable fastening means.

Line 10 after "through", insert and beyond. Lines 12 and 13, change "resting on" to engaging.

Line 22, change "contact" to contacts. Last line change "close" to in striking relation; and after numeral 29 place a comma and insert the position of the anvil varying obviously with its described adjustment.

Page 4, line 17 after "engine" insert the following paragraphs—

¶By referring to the preferred embodiment of my invention as depicted in the drawing it will be seen that the single spring 28 is, due to the manner of its connection with the movable electrode shaft and the igniter block 8, of the torsional class of springs, while the multiple springs 31, 32, acting cumulatively upon the oscillating yoke member, 30 are tension springs exerting their combined elastic resistance to tension upon yoke member 30 whenever it is oscillated from its normal position of rest. Furthermore, while torsion spring 28 is shown formed of a much smaller grade of spring wire than the multiple tension springs 31, 32, it will also be obvious that its relative tensional relation to the combined springs 31, 32 will be greatly diminished by the system of leverages disclosed in the drawings of these associated parts. For example, torsion spring 28 must exert its reaction upon anvil lever 27 at a point relatively close to the fulcrum of this lever while the combined tension of springs 31 and 32 is exerted upon the outer extremities of yoke 30, one of which

parts also forms the striker and comes in direct contact with the anvil 29 on arm 27, so that there is no loss of the reacting power of this pair of springs. This multiplies the effectiveness of springs 31, 32 over the torsion spring 28 many times, with the result that in the combination of these elements shown

in the drawing the reaction of the combined rotor springs is controlling, and when the momentum of the rotor carries it over center obviously the less effectively arranged single spring 28 will yield allowing the igniter points to separate, but closing them quickly when the rebounding effect of the rotor yoke is withdrawn.

In practice, I prefer to adjust the anvil 29, which as shown in the drawings, is of an old and well known form of those skilled in this art, in relation to movable electrode arm 27 and the striking part of the yoke 30, so that when the yoke is at rest it will not influence the position of the movable electrode arm 27 with the result that normally the electrode points will be in contact, which, as well known to those skilled in this art, is desirable in keeping the contact points of the electrodes free from deposits of carbon or other substances on the interior of the engine cyinder that may interfere with the free discharge of the ignition spark between the contacts. An obvious adjustment, however, of anvil 29 to precisely close the normal gap between it and yoke 30, as shown, for example in Figs. 2 and 3, will not change the described mode of operation of the igniter points, but if the anvil be still further adjusted toward the yoke after the gap disappears, obviously the anvil 27 will rest normally in contact with the yoke and the igniter points will be nor-

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972 No. 2097—4. 9123

mally separated by the increased leverage of springs 31, 32 over spring 28, to be closed momentarily when the rotor yoke is rocked or cocked away from it and afterwards quickly separated by the rebound impact of the yoke on its release from operating plunger 36

Arrange that portion of the paragraph following the above insertion, beginning with "The", line 17, page 4, and ending with line 24, same page, as a separate paragraph.

Remarks.

In view of the above amendment and the probable change in the Examiner's recommendations, as expressed at the said oral interview, Applicant is at this date asking for a rehearing of the petitions to the Commissioner under date of Oct. 4, 1915 and Sept. 1, 1915, respectively.

Since this amendment is believed to introduce no new matter not covered in scope by the amendment of Sept. 18, 1915 (Chicago), not entered, it is believed that the oath accompanying said amendment is applicable to the present amendment without revision, but a new oath will be furnished if thought desirable by the Office.

Respectfully submitted,

BROWN NISSEN & SPRINKLE,
Attorneys for Edmund J. Kane.

Washington, D. C.
Oct. 18, 1915.
2097
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973 2—213

Forwarded from Div. 28 to Examiner of Interferences. Oct. 20, 1915.

Paper No. 21 [Interference.]

DEPARTMENT OF THE INTERIOR.

United States Patent Office,

Washington, D. C.

(Rubber Stamp) U. S. Patent Office, Interference Division Oct 26 1915 Mailed

Brown, Nissen & Sprinkle,
312 So. Dearborn St., Chicago,
Ill.

Please find below a copy of a communication from the Examiner concerning the application of Edmund Joseph Kane, S. No. 2097, filed Jan. 14, 1915, Electric Igniters, Division of Application No. 541,428, filed Feb. 2, 1910.

Very respectfully,

THOMAS EWING
Commissioner of Patents.

Room No. .....
Address only
The Commissioner of Patents
Washington, D. C.

6—1636 39181

The case, above referred to, is adjudged to interfere with others, hereafter specified, and the question of priority will be determined in conformity with the Rules.

The statement demanded by Rule 110 must be sealed up and filed on or before Nov 29 1915, with the subject of the invention, and name of party filing it, indorsed on the envelope. The subject-matter involved in the interference is

Count 1. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, springs means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

Count 2. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, springs means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

Count 3. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

Count 4. The combination of an igniter having relatively

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974 —2— (Kane, 2097).

fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

Count 5. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

Count 6. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral barcket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

Count 7. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base, spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

Count 8. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

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975 —3— (Kane, 2097).

Count 9. The combination of an igniter frame, comprising a body and laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted

in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

The interference involves your application above identified and

A Patent (Reissue No. 13,878, Reissued Feb. 9, 1915) for Current-Generator and Igniter for Internal-Combustion Engines, to Emil Podlesak, of Racine, Wis., whose attorney is Lynn A. Williams, Monadnock Block, Chicgao, Ill.

The relation of the counts of the interference to the claims of the respective parties is as follows:

Counts:	Kane:	Podlesak:
1	7	13
2	8	14
3	9	15
4	10	19
5	11	20
5	12	21
7	13	22
8	14	23
9	15	24

A R Benson
Examiner.

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976 2—079

INTERFERENCE.

Interference No. 39181 Paper No. 22
Name, Edmund Joseph Kane
Serial No. 2097
Title, Electric Igniters
Filed, Jan. 14, 1915
Interference with Emil Podlesak (Reissued Patent No. 13,878)

Decisions of

Primary Examiner, ... Dated, ...
Ex'r of Interferences, Favorable Dated, March 24/16.
Board, Adverse Dated, Jan. 15/17
Commissioner, " Dated, June 18, 1917

Remarks:

This should be placed in each application or patent involved in interference in addition to the interference letters by Primary Examiner.

2097
68 6—1970

977 (Rubber Stamps) Mail Room May 4 1916 U. S. Patent Office Docket Clerk May 4 1916 U. S. Patent Office
2,097—23
Doc

UNITED STATES PATENT OFFICE

Applicant—Edmund Joseph Kane — Case
Invention—Electric Igniters — Div. 28
Serial No.—2,097 — Filed January 14, 1915.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

I, Edmund Joseph Kane, of Chicago, in the County of Cook and State of Illinois, do hereby revoke all powers of attorney heretofore executed by me and do hereby appoint Lynn A. Williams and Clifford C. Bradbury, of the co-partnership of Williams & Bradbury (Reg. No. 10,473), of 720 Monadnock Block, Chicago, Illinois, my attorneys, with full power of revocation and substitution, to prosecute my application for United States Letters Patent Serial No. 2,097, filed January 14, 1915, for an improvement in Electric Igniters, to make alterations and amendments therein, to receive the patent and to transact all business in the Patent Office connected therewith.

Signed at Chicago, in the County of Cook and State of Illinois, this 20th day of April, A. D. 1916.

EDMUND JOSEPH KANE

(Documentary revenue 25-cent stamp.)

Accepted May 3 1916.

R F WHITEHEAD
Assistant Commissioner.

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978 EEG Serial No 2097 Paper No. 24
2—069

Address only
The Commissioner of Patents,
Washington, D. C.

DEPARTMENT OF THE INTERIOR.

United States Patent Office,

Washington, D. C.

May 5, 1916

You are hereby informed that Your Power of Attorney Has *(*Revoked*)
Been Accepted in the matter of the application of Edmund J. Kane for Letters Patent for an Improvement In Electric Igniters No. 2097. Filed Jan. 14, 1915.

Very respectfully,

THOMAS EWING,
Commissioner.

Williams and Bradbury
720 Monadnock Block
Chicago, Ill.

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*Matter in italics in parentheses, stricken out in original transcript.

979 141 2—069
EEG

Address Only
The Commissioner of Patents,
Washington, D. C.

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C.

May 5, 1916

You are hereby informed that Your Power of Attorney Has Revoked
Been *(*Accepted*) in the matter of the application of Edmund J. Kane for Letters Patent for an Improvement in Electric Igniters No. 2097 Filed Jan. 14, 1915

Very respectfully,
THOMAS EWING,
Commissioner.

Brown, Nissen & Sprinkle
312 S. Dearborn St.
Chicago, Ill.

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6—1894

*Matter in italics in parentheses, stricken out in original transcript.

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(Rubber stamps) Mail Room Jun 17 1918 U. S. Patent Office U. S. Patent Office Jun 18 1916 Division XXVIII.

UNITED STATES PATENT OFFICE

Applicant—Edmund Joseph Kane Case 2.
Invention—Electric Igniters
Serial No.—2097 Filed January 14, 1915.

1315 Monadnock Block,
Chicago, Ill., June 15, 1918.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

In the matter of the above entitled application please add the following claims:

7. *(*16.*) In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an engine cylinder, spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, a rigid unitary and integral support upon which all of the aforesaid parts are mounted, whereby all of said parts may be removed from and returned to their position upon an engine cylinder without disturbing their relations one to another, conductors for carrying electric current from said generating winding to said electrodes, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it.

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981 8 *(*17.*) In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an engine cylinder,

*Matter in italics in parentheses, stricken out in original transcript.

spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, a supporting member upon the several parts of which all of the aforesaid mechanism is mounted and having a single integral part adapted to be attached to the engine, whereby all of said mechanism may be removed from the engine by removing said single integral part and may be returned to its position upon the engine with unchanged relations between and and all of the parts of all of said mechanism, thereby insuring the predetermined synchronism and interrelated adjustment of said mechanism when it is replaced upon the engine, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it.

sig

Remarks:

This application was the subject of an oral interview between the Principal Examiner and Mr. Walter Brown, Vice-President and General Manager of the Webster Electric Company, the assignee of record, and Lynn A. Williams, a member of the firm of attorneys of record, on June 6th and 7th.

This application has recently been involved in two interferences, No. 39,013, between Kane and Milton, and No. 39,181 between Kane and Podlesak. Testimony was taken in the interference between Kane and Milton as a result of which

982 priority of invention was awarded to Kane as to all of the six counts involved in the interference.

In the interference between Kane and Podlesak, Podlesak's preliminary statement did not allege a date of invention as early as the filing date of Kane's original application, of which the present application is a division, and as a consequence the Examiner of Interferences gave notice of a judgment to be entered upon the record in favor of Kane unless Podlesak should show cause to the contrary.

Thereupon Podlesak's motion to dissolve the interference upon the ground that Kane's disclosure did not support the counts of the interference issue was referred to the Law Ex-

aminer and decided by him to the effect that Kane could and did have the right to make the claims.

Following this decision of the Law Examiner the Examiner of Interferences entered a pro forma judgment of priority in favor of Kane. Thereupon Podlesak took an appeal to the Board of Examiners in Chief. The decision of the Court of Appeals in Rowntree vs. Sloan was rendered just prior to the argument of this case to the Board and the Board awarded priority to Podlesak upon the ground that Kane was estopped under the doctrine of Rowntree vs. Sloan to make the claims of the issue.

Kane then took an appeal to the Commissioner of Patents who declined to follow the Board upon the matter of estoppel, but who decided, in accordance with the Principal Examiner's original views in this case, that Kone's disclosure did not support the interference issue. The Commission's award of priority having, therefore, been in favor of Podlesak Kane took an appeal to the Court of Appeals which recently rendered a decision, a copy of which we understand is in the

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Examiner's application file. The decision of the Court of Appeals awards priority of invention to Podlesak upon the ground that Kane is estopped to make the claims of the Podlesak patent, and the Court also expressed its agreement with the conclusion of the Commissioner that the claims of the interference issue are not readable upon Kane's disclosure. For convenience in reference we are sending herewith a copy of the printed record and briefs in the Court of Appeals. The printed record contains the briefs filed by Podlesak before the lower tribunals. These briefs will advise the Examiner as to the various features and elements of the several counts of the Kane-Podlesak interference which were contended by Podlesak and his attorneys not to be found in Kane's structure. These contentions were, mainly, that the claims copied from the Podlesak patent were limited to a structure having a certain specific arrangement of spring tensions and anvil adjustment such that the electrode points must be normally separated; that the generator must be removably mounted as a whole upon the shelf of the bracket member; that the bracket member must have a flat horizontal shelf or base which must lie underneath the generator and

from which the generator can be removed in toto, including its bearings; and that the Kane structure did not embody these details and refinements.

There is and has been no question of the fact that Kane's structure was invented, reduced to practice, and put into public use before Podlesak had any conception of the structure disclosed in his patent. The fact is that Podlesak went to work for the Webster Electric Company some years later than Kane and at a time when the Webster Electric Company had been manufacturing and selling the Kane structure, as a result of which the Kane structure became fully known to Podlesak before his original application filed and before he

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claims to have invented the subject matter of his patent. His contentions thruout the interference case have been to the effect that his invention was limited to details and refinements not found in the Kane structure which preceded his invention.

The two claims presented herewith are not limited to any of these refinements or details.

The decision of the Court of Appeals is, of course, binding upon the Primary Examiner to the effect that Kane is now estopped to make these specific and detailed claims of the Podlesak patent because of his delay in so doing.

Insofar as any prosecution of this application before the Primary Examiner is concerned we promptly concede that we are bound by the estoppel of res adjudicata and by the Court of Appeals. It is clear, however, that this estoppel does not and cannot run as against the claims now presented.

In the first place the estoppel invoked against Kane is based wholly upon the fact that Podlesak claimed and issued a patent claiming the invention involved in the interference long in advance of the date at which Kane first claimed this subject matter.

Secondly, when Kane first filed his present application he made six claims, some of which, as for example claim 5, are much broader than the Kane-Podlesak interference issue and which unquestionably read upon the Podlesak disclosure. This claim 5, and others, stand allowed in the Kane application and they have thus stood thruout the interference proceeding. These claims were the subject matter of the inter-

ference between Kane and Milton in which the award of priority was to Kane.

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There is and can be no estoppel against Kane as to these broad claims as originally filed by him prior even to the issue of the Podlesak patent.

These same broad claims were, in fact, made in Kane's original application long prior to the filing even of Podlesak's reissue application and were incorporated in Kane's present application only because of the Office requirement for division.

It is clear, therefore, that no estoppel can be asserted against Kane as to these broader claims which now stand allowed in the case and which have been in the application from the beginning.

If these certain broad claims readable upon the Podlesak structure are not subject to the estoppel there is no reason why an estoppel can be asserted against the claims which are presented by this amendment.

Furthermore, Podlesak has, in effect, contended thruout that he does not and never has claimed the broad subject matter of the claims now presented. Such being the case, there can be no more of an adverse interest upon which to base an estoppel than if Podlesak had never secured any patent whatsoever.

To put the matter briefly, if Kane were to cancel the claims involved in the interference with Podlesak, and if the patent should issue to Kane containing the six claims which have stood in the Kane application from the beginning and also the two claims now presented, Podlesak would have his patent containing the specific claims which alone cover what he claims to have been his invention and Kane would have a patent covering, not Kane's specific improvements, not Po-

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dlesak's specific improvements, but the broad subject matter disclosed by both Kane and Podlesak but to which Podlesak makes no claim.

It seems clear that the adjudication in the interference can be no bar to the allowance of the claims now presented.

At the oral interview above referred to, we demonstrated to the Examiner the advantage of the Kane structure over that of the Weber patent No. 820,535 of the prior art, and we believe that the claims now presented distinguish clearly from the disclosure of the Weber patent and from all else in the prior art which has been cited or which has come to our attention. The claims now presented require that all of the mechanism comprising the combination of elements stated in the claims shall be mounted upon the supporting member whereby the relative adjustments and synchronism may be maintained or insured no matter how often the ignition mechanism may be removed from and replaced upon the engine with which it is associated. In the Weber device there are two supporting members adapted to be attached to different parts of the engine. Upon one of these members the electrodes are mounted. Upon the other member the spring mechanism and push rod engaging mechanism are mounted. Weber's generator is in turn mounted upon still a third part of the supporting arrangement and this separate generator supporting shelf is in turn clipped under two of the bolt heads which hold the flange of the igniter plug to the engine cylinder. In Weber, therefore, it is impossible to remove the entire ignition equipment as a unit or without disassembling it, and any slight failure to return all of the supporting parts

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to their identically same positions and same relative positions is bound to alter the interadjustment and relationships between the essential functional parts of the ignition equipment, with consequent liability to destroy the necessary synchronism, let alone the inconvenience and labor involved in attempting to remove and replace the ignition equipment.

The claims now presented are not descriptive of the Weber device. They do describe the features of Kane's structure wherein Kane's very important practical advantages over Weber inhere.

It is respectfully submitted that these claims are allowable, and while, of course, we anticipate the Examiner's formal rejection of claims 7 to 15, inclusive, which were involved in the interference with Podlesak, we shall be glad to have the Examiner indicate in his action the allowability of the claims

now presented in order that we may be in a position to conclude promptly the prosecution of the application.

Respectfully,

EDMUND JOSEPH KANE,
By WILLIAMS & BRADBURY,
Attorneys.

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988 2—260

Division 28 Room 225
Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

Paper No. 26
All communications respecting this application should give the serial number, date of filing, title of invention, and name of the applicant.

DEPARTMENT OF THE INTERIOR

RYH United States Patent Office

Washington

July 6, 1918.

Williams & Bradbury,
720 Monadnock Block,
Chicago, Ill.

(Rubber Stamp) U. S. Patent Office Jul 6 1918 Mailed.

Please find below a communication from the Examiner in charge of the application of Edmund Joseph Kane, S. No. 2097, filed Jan. 14, 1915, Electric Igniters.

JAMES T. NEWTON
Commissioner of Patents.

c6—2681

Case considered as amended June 17, 1918.

The recent interference in which this application was involved having terminated adversely to applicant, claims 7 to 15, corresponding to the issues of said interference, are finally rejected.

Claims 16 and 17 are allowed.

BENSON
Examiner.

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989 Enter *(*Not of record in Div. 14 Not in District No.*)
27D

(Rubber Stamps) Mail Room Aug 3 1918 U. S. Patent Office U. S. Patent Office Aug 6 1918 Division 14 U. S. Patent Office Paper No. Aug 7 1918 Division XXVIII.

UNITED STATES PATENT OFFICE.

Applicant—Edmund Joseph Kane Case 2.
Invention—Electric Igniters
Serial No.—2097 Files January 14th, 1915.

T28

1315 Monadnock Block,
Chicago, Ill., July 30, 1918.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:

In the matter of the above entitled application please amend as follows:

By cancelling claims 7 to 15, inclusive, and renumbering 16 and 17 as [7 and 8.]

Remarks:

The claims rejected by office action of July 6th, 1918, having been cancelled by the above amendment, this application now appears to be in condition for allowance which is respectfully requested.

Attached hereto is a supplemental Oath relating to the claims filed by the amendment of June 17th, 1918.

Respectfully,
EDMUND JOSEPH KANE,
By WILLIAMS & BRADBURY,
Attorneys

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*Matter in italics in parentheses, stricken out in original transcript.

990 (Rubber stamps) (Illegible) Aug 6 1918 Division 14. Mail Room Aug 3 1918 U. S. Patent Office U. S. Patent Office Aug 7 1918 Division XXVIII.

Serial No. V Paper No.

SUPPLEMENTAL OATH.

State of Ill. }
County of Cook. } ss:

EDMUND JOSEPH KANE, whose application for letters patent for an improvement in Electric Igniters, serial No. 2097, was filed in the United States Patent Office on or about the 14th day of January, 1915, being duly sworn, deposes and says that he has read the amendment filed June 15th, 1918, in the above entitled application, and that the subject matter of said amendment was part of his invention, was invented before he filed his original application, above indentified, for such invention, was not known or used before his invention, was not patented or described in a printed publication in any country more than two years before his application, was not patented in a foreign country on an application filed by his legal representatives or assigns more than twelve months before his application, was not in public use or on sale in this country for more than two years before the date of his application, and has not been abandoned.

EDMUND JOSEPH KANE.

Sworn to and subscribed before me this 1st day of Aug 1918.

MARY A COOK
Notary Public

(Seal)
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991 2—181

Address only
The Commissioner of Patents,
Washington, D. C.

Serial No. 2097.

WTP

DEPARTMENT OF THE INTERIOR

United States Patent Office

Washington

August 27, 1918.

Edmund Joseph Kane, Assor.

Sir: Your Application for a patent for an Improvement in Electric Igniter filed January 14, 1915, has been examined and Allowed.

The final fee, Twenty Dollars, must be paid not later than Six Months from the date of this present notice of allowance. If the final fee be not paid within that period, the patent on this application will be withheld, unless renewed with an additional fee of $15, under the provisions of Section 4897, Revised Statutes.

The office delivers patents upon the day of their date, and on which their term begins to run. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will require about four weeks, and such work will not be undertaken until after payment of the necessary fee.

When you send the final fee you will also send, Distinctly and Plainly Written, the name of the Inventor, Title of Invention, and Serial Number as Above Given, Date of Allowance (which is the date of this circular), Date of Filing, and, if assigned, the Names of the Assignees.

If you desire to have the patent issue to Assignees, an assignment containing a Request to that effect, together with the Fee for recording the same, must be filed in this office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of Five Cents Each. The money should accompany the order. Postage stamps will not be received.

Final fees will Not be received from other than the appli-

cant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Respectfully,

JAMES T. NEWTON
Commissioner of Patents.

Williams & Bradbury,
720 Monadnock Block,
Chicago, Ill.

(In left-hand margin) ☞In Remitting the Final Fee Give the Serial Number at the Head of this Notice.

(In right-hand margin) ☞Uncertified Checks Will Not be Accepted.

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MEMORANDUM
of
Fee Paid at United States Patent Office.

√

(Rubber stamp) $20 Rec't Aug 29 1918 C. S. U. S. Pat. Office

(Be careful to give correct Serial No.)

Serial No. 2,097 , 191
Inventor: Edmond Joseph Kane
Patent to be Issued to Inventor
Name of Invention, as Allowed: Electric Igniters
Date of Payment: Aug. 29, 1918
Fee: $20.00
Date of Filing: January 14, 1915
Date of Circular of Allowance: August 27, 1918

The Commissioner of Patents will please apply the accompanying fee as indicated above.

WILLIAMS & BRADBURY
Attorneys.

Send Patent to
Williams & Bradbury,
1315 Monadnock Block,
Chicago, Ill.

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84 6—1846

993 2—421

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CONTENTS:

Print—Aug. 14/15

1. Application O K papers.
2. Rej.—May 24 1915
3. Amdt. A Apr. 17, 1915
4. Sup. Oath May 10, 1915
5. Rej. Aug 6, 1915
6. Interference Aug. 24, 1915
7. Interference Card
8. Amdt. Aug 26/15 Not Entered
9. Petition Sept. 3, 1915
10. Affidavit Sept. 7, 1915
11. Exrs. statement Sept. 8 1915
12. Comr's decision paper #9 Sept. 15, 1915
13. Notice of Decision, Sept. 16, 1915
    not entered
14. Amendt. A & Supplemental Oath, Sept 20 1915
15. Petition Oct. 6, 1915
16. Exrs. Statement Oct. 9, 1915
17. Commiss'rs decision (paper #15) Oct 9, 1915
18. Notice of decision Oct 11, 1915
19. Restoration of Jurisdiction Oct 18/15
20. Amdt B Oct 18/15
21. Interference Oct 26 1915
22. Interference Card
23. Revocation and Power of Attorney May 4/16
24. Notices of Revocation and Acceptance May 5/16
25. Amd't C June 17, 1918
26. Rej. July 6, 1918
    Sup. Oath
27. Amdt D and Aug. 3/18
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999 EXHIBIT NO. 57.

IN THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

Edmund J. Kane,
Appellant,
v.
Emil Podlesak.

Patent Appeal
Docket No. 1147.

This is an appeal from a decision of the Commissioner of Patents awarding priority of invention to Podlesak.

A motion to dissolve the interference, filed by Podlesak, was made on the ground that Kane had no right to make the claims of the issue; first, because of laches and estoppel; second, because the claims, all of which were taken from a reissued patent of Podlesak, when properly construed would not read on Kane's structure; and, third, because the terms of the claims if expanded in meaning in an attempt to read them on the Kane structure, would also read upon devices of the prior art. The Commissioner of Patents set this motion for hearing as the second ground, but not as to the first and third, saying that the alleged delay in the presentation of the claims by Kane would not constitute ground for dissolving the interference, and that Podlesak, being a patentee, could not allege that the claims of the issue should be more narrowly construed than the plain terms would warrant.

The law examiner held that Kane had the right to make the claims and denied the motion for a dissolution. The Board of Examiners in Chief held on the authority of Rountree v. Sloan, 45 App. D. C. 207, that Kane was estopped from making the claims because of laches, stating that it was not necessary to pass upon the question of Kane's right to make the claims of the interference.

1000 The Commissioner sustained the decision of the Examiners in Chief but on the ground that Kane was not entitled to make the claims. He called attention to the fact that the claims first appeared in the Podlesak reissue patent and that Kane filed his amendment including those claims within a month after the granting of the reissue patent; but he added that he was not disposed in the absence of experience with the rule laid down in Rountree v. Sloan, supra, to acquiesce in the extension of it made by the Examiners in Chief by applying it to the present case.

Kane's original application was filed on February 2, 1910. His present application here in question and claimed to be a division thereof, was filed January 14, 1915. The application for Podlesak's original patent was filed April 15, 1912, and he obtained his patent March 4, 1913. On December 23, 1914, Podlesak applied for a reissue. A reissue patent was granted February 9, 1915. On April 19, 1915, Kane amended his alleged divisional application so as to make the claims of the present issue.

In Rountree v. Sloan, supra, this court held that failure to make the claims of the issue on the part of one of the parties to an interference for three years after the grant of a patent to his adversary estopped him from making the claims, because the life of the patent monopoly would be extended if the party seeking to make the claims should be finally successful, citing Re Fritz, 45 App. D. C. 211. Mr. Justice Robb for the court said that the claims should have been made promptly and at least within the time allowed for amendment after office action.

We are of the opinion that the Examiners in Chief were right in holding that the present application comes within the rule of the Rountree case. A reissue patent must be for the same invention as the original patent but the patentee may redescribe his invention, including however in the description and claims of the specifications only what was well described before or what was suggested or substantially
1001 indicated in his old specification or drawings as properly belonged to the invention as actually made and perfected. Marsh v. Seymour, 97 U. S. 348-356. The basis for the claims of the issue in this matter is therefore to be found in Podlesak's original patent of which Kane had notice from the date of its issue. Kane should therefore have moved promptly and not having done so is estopped to make the claims.

Were the case otherwise as to laches we should be inclined to affirm the decision of the Commissioner upon the grounds upon which he placed it; that is to say, because Kane has no right to make the claims. The Commissioner points out that both parties were claiming for improvements over the prior art and in slight particulars only but that Kane nowhere disclosed in his original or divisional application, until he came to make the claims of the Podlesak patent, that he was concerned with keeping the electrodes of the igniter normally

separated or that he had invented what can be reasonably called an integral bracket.

The decision of the Commissioner is affirmed.

By the Court:

WALTER I. McCOY,
Justice.

(Endorsed:) No. 1147, Patent Appeal Docket. Edmund J. Kane, Appellant, vs. Emil Podlesak. Opinion of the Court per Mr. Justice McCoy. Court of Appeals, District of Columbia, Filed May 6, 1918. Henry W. Hodges, Clerk. 1048 X 105—92

DEFENDANT'S EXHIBIT 66.

ASSIGNMENT

For and in Consideration of the sum of One Dollar ($1.00) to me in hand paid, and other good and valuable consideration, the receipt of which is hereby acknowledged, John L. Milton, of Louisville, in the County of Jefferson, and State of Kentucky, to hereby sell, assign and transfer unto Lynn A. Williams, Trustee of Chicago, Illinois, the whole right, title and interest in and to my inventions and improvements disclosed in the following named United States Letters Patent and applications for patent and in and to the following United States Letters Patent and applications for patent:

Case	Serial No.	Filed	Allowed	Issued	Improvement
1	307,391	3/22/06	11/ 5/09	5/31/10 #959,954	Electric Generators.
2	357,041	2/12/07			Inductor Generators.
3	379,485	6/17/07			Inductor Generators for Ignition Purposes.
5	443,608	7/15/08			Magneto Ignition Apparatus.
9	475,171	1/30/09			Apparatus and Method for Generating Alternating Currents.
10	589,654	10/28/10			Magneto Generators.

the said right, title and interest to be held and enjoyed by the said Lynn A. Williams, Trustee, for its own use and behoof and for the use and behoof of its successors and assigns
1041 to the full and of the term for which said Letters Patent and may be granted, as fully and entirely as the

—1—

same would have been held and enjoyed by me had this assignment and sale not been made, and I hereby sell, assign

and transfer to Lynn A. Williams, Trustee, all rights and causes of action and suit resulting from infringements of said patents which may have occurred at any time during the life of said patent and prior to the date hereof, and I further hereby sell, assign and transfer unto said Lynn A. Williams, Trustee, the whole right, title and interest in and to any inventions and improvements relating to Low Tension Ignition Apparatus and Systems which I have made, and I agree to execute all papers, including formal assignments, which may be necessary or expedient to enable said Lynn A. Williams, Trustee to obtain and acquire patents thereon and legal title thereto.

I Authorize and Request the Commissioner of Patents to issue the patents which may be granted on said applications to said assigns for the sole use and behoof of said assignee, its successors and assigns.

In Testimony Whereof, I have signed my name and affixed my seal, at Chicago, Illinois, as of the 10th day of April, A. D. 1912.

JOHN L. MILTON (Seal)

State of Illinois }
County of Cook } ss:

Be it remembered that on this 10th day of April, 1912, before me, Leonard W. Novander, a Notary Public, duly commissioned, qualified and acting in and for the County and State aforesaid, come John L. Milton, personally known to me to be the identical person whose name is subscribed to the foregoing instrument of writing and acknowledged that he executed and signed the same as his free act and deed for the purposes and consideration therein expressed.

In Witness Whereof I have hereunto set my hand and affixed my official seal the day and year last above written.

LEONARD W. NOVANDER
Notary Public.

Leonard W. Novander
Notary Public
Cook Co. Ill.

Recorded December 13, 1915.—2—#598
E H G
G R M
E C M
(Endorsed) Feb 1-1919

DEFENDANT'S EXHIBIT 67.

1043 E H G
M E W
L L W
D105—69

ASSIGNMENT

For and in Consideration of the sum of One Dollar ($1.00) to me in hand paid, and for other good and valuable considerations, receipt of which is hereby acknowledged, I, Lynn A. Williams, Trustee, of the City of Chicago, in the County of Cook, and State of Illinois, do hereby sell, assign, and transfer unto the Webster Electric Company, a corporation organized and existing under the laws of the State of Wisconsin, and having its principal place of business at Racine, Wisconsin, the whole right, title, and interest in, to, and under the following United States Patents issued to John L. Milton:

Patent No.	Issued	Improvement in
959,954	May 31, 1910	Electric Generator
1044 1,051,373	January 21, 1913	Inductor Generator for Ignition Purposes
1,053,107	February 11, 1913	Apparatus for Generating Ignition Purposes
1,096,853	May 19, 1914	Magneto Generator
1,096,048	May 12, 1914	Magneto Generator
1,142,047	June 8, 1915	Inductor Generator

together with all rights of action for past infringement thereof.

Signed, Sealed, and Delivered this 28th day of June 1918.

LYNN A. WILLIAMS
Trustee.

In Presence of:
MARY A. COOK
ANDREW WINTERCORN

State of Illinois }
County of Cook } ss:

Be it Remembered that on this 28th day of June 1918, before me, Mary A. Cook, a Notary Public, duly commissioned, qualified, and acting in and for the County and State aforesaid, came Lynn A. Williams, who is personally known to me to be the identical person described in and who executed and signed the foregoing instrument of writing, and duly acknowl-

edged that he executed the same as his free act and deed for the purposes and considerations therein expressed.

In Witness Whereof, I hereunto set my hand and affix my official seal the day and year last above written.

MARY A. COOK
Notary Public.
Recorded July 1 1918.
371

MARY A. COOK
Notary Public
Cook County
Illinois.
(Endorsed) Feb. 1 1919

DEFENDANT'S EXHIBIT 68.

Know All Men By These Presents, that Webster Electric Company, a corporation of West Virginia, having its principal place of business in the City of Racine,
(Endorsed) Feb 1-1919
1048 County of Racine and State of Wisconsin, party of the first part, for and in consideration of the sum of One Dollar ($1) lawful money of the United States of America, to it in hand paid at and before the ensealing and delivery of these presents by the Webster Electric Company, a corporation of Wisconsin, having its principal place of business in the City of Racine, County of Racine and State of Wisconsin, party of the second part, and other good and valuable consideration, the receipt whereof are hereby acknowledged, has bargained, sold, granted, transferred, assigned, and conveyed, and by these presents does bargain, sell, grant, transfer, assign and convey unto the said party of the second part, all of the following goods and chattels and property, to wit:

All the property, property rights, business and assets belonging to said first party or in which it is interested, including all its copyrights, trade-rights, trade-names, patents, patent rights, devices and inventions of every kind and character, owned by, or in which said first party has any interest whatsoever; including any and all interest in or to and any or all benefits and any and all claims and rights of action past or future arising out of any and all of the following contracts, to wit:

A "License Agreement" between Webster Electric Com-

pany of West Virginia and Emil Podlesak and Henry Joseph

—1—

Podlesak, dated February 5, 1914, relating to United States Letters Patent numbered 947,647, 948,483, 1,003,649;

A "License Agreement (shopright)" between Webster Electric Company of West Virginia and Emil Podlesak and Henry Joseph Podlesak, dated February 5, 1914, relating to United States Letters Patent numbered 1,022,642, 1,055,076 (Reissue No. 13,878), 1,056,360, and pending applications for United States Letters Patent serial No. 734,153 (since issued as patent No. 1,101,956), serial No. 668,153 (since issued as patent No. 1,098,754) and serial No. 639,738 (since issued as patent No. 1,098,052);

A "Supplemental Agreement" between Webster Electric Company of West Virginia and Emil Podlesak and Henry Joseph Podlesak, dated January 20, 1915, relating to United States Letters Patent numbered 948,647, 948,483, (1,003,649, 1,022,642, 1,055,076, (Reissue No. 13,878), 1,056,360, 1,101,-956 ,1,098,052 and 1,098,754;

(Endorsed) Feb 1-1919

1049 An "Assignment and Agreement" by and between Emil Podlesak and the Webster Electric Company of West Virginia, dated February 5, 1914, and relating to Letters Patent of countries other than the United States of America, as follows:

German application No. 28,522;

German application No. 28,756 (since issued as German patent 260,204);

German application No. 29,217;

German application No. 29,218;

British application No. 8,988 of 1912 (since issued as a patent—same number);

British application No. 10,209 of 1912 (since issued as a patent—same number);

British application No. 25,646 of 1912 (since issued as a patent of the same number);

—2—

An "Agreement" between John L. Milton, the Webster Mfg. Company of Ohio, Webster Electric Company of West Virginia, and Towner K. Webster, dated April 10, 1912, and relating to certain applications of said Milton for United States Letters Patent and the patents issued or to be issued as a result thereof, and the escrow provided for, in which said escrow agreement was accepted by Lynn A. Williams

under date of April 10, 1912;

A "Trust Agreement" made and entered into between John L. Milton and Webster Electric Company of West Virginia, dated December 11, 1915, and relating to United States Letters Patent numbered 959,954, 1,051,373, 1,053,107, 1,096,048, 1,096,853 and 1,142,047, or the then pending applications therefor;

And in and to any other license or agreement or contract relating to any of the above or to any other patents or application for patents owned by said first party or in which it is interested;

Also all iron, steel, copper, magnetos, goods, wares, merchandise, fixtures, machinery, raw materials of all kinds, materials and goods in process of manufacture, patterns, tools and equipment; also all causes of action, claims, rights and demands, either in law or in equity; also all orders on hand and all contracts entered into by said first party, and relating to the business heretofore carried on by said first party; and also all real estate and buildings owned by said first party and located in the City of Racine, State of Wisconsin, or elsewhere; together with all other property, property

—3—

rights, and assets, tangible or intangible, of every kind, nature and description, whatsoever and wherever located; including the good will of the business heretofore carried on by said first party, inteding hereby to transfer to

(Endorsed) Feb 1-1919

1050 said second party and vest in it the legal ownership of the entire assets of said first party.

Subject to any and all obligations arising from any contracts hereinabove mentioned, all of which said contracts said second party shall and hereby does assume and agree to perform. Also subject to all liens, encumbrances, debts and liabilities direct, contingent, and otherwise against said first party, now in existence or which may at any time hereafter be asserted against said first party; all of which said liens, encumbrances, debts and liabilities said second party assumes and hereby agrees to pay and discharge.

Said first party hereby agrees to execute any and all additional deeds and instruments which may be necessary to convey to said first part any and all of the property and property rights hereinabove mentioned.

To Have and to Hold said goods, chattels, assets, and

property unto the said party of the second part, its successors and assigns forever.

And the said party of the first part, for itself and its successors, does hereby covenant and agree to and with the said party of the second part, its successors and assigns, that it is the lawful owner of the property above described, that it has good right to sell, convey and transfer the same as aforesaid, and that it will warrant and defend the said property

—4—

hereby sold, unto the said party of the second part, its successors and assigns, against all lawful claims and demands of all persons.

In Witness Whereof, the said first party has caused this instrument to be executed by its duly authorized officers and its corporate seal to be hereunto affixed, at Chicago, Illinois, this 12th day of March, 1918.

WEBSTER ELECTRIC COMPANY OF WEST VIRGINIA
By T. K. WEBSTER
President.

The
Webster Electric
Company
Corporate
Seal
West Virginia.
Attest:
F. A. FISCHEL
Assistant Secretary.
Sealed and delivered in
the presence of:
HAROLD B. SMITH
JEANE N. FRANK

State of Illinois } ss:
County of Cook }

On this 12th day of March, 1918, before me, a Notary Public in and for Cook County, State of Illinois, personally appeared T. K. Webster and Frederic A. Fischel, to me personally known to be the President and Assistant Secretary, respectively,

(Endorsed) Feb 1-1919

1051 of the Webster Electric Company, a corporation of West Virginia, and severally acknowl-

edged that they executed the foregoing instrument as such President and Assistant Secretary, respectively, of said Webster Electric Company, a corporation of West Virginia, and affixed the corporate seal thereto as their free and voluntary act and as the free and voluntary act and deed of said Webster Electric Company, a corporation of West Virginia, for the uses and purposes therein set forth.

In Witness Whereof, I have hereunto set my hand and Notarial Seal, this 12th day of March, 1918.

A. KATE DEMPSEY
Notary Public.

A. Kate
Dempsey
Notary Public
Cook County,
Ill.

Recorded July 1, 1918. 1489
(Endorsed) Feb 1 1919
1040 D 99—86

1056 DEFENDANT'S EXHIBIT 73—E. O. E.

32313
To
The United States District Court.
From
The Municipal Court
of Chicago.
Gen. No. 209569.
Webster Electric Company, a corporation
under the laws of West Virginia.
vs
Tesla Emil Podlesak.
Transcript of Proceedings.

FRANK P. DANISCH.
Clerk.

(Endorsed) Filed Dec. 22, 1915, T. C. MacMillan, Clerk.

1057 The Municipal Court of Chicago.

Transcript of Proceedings.

United States of America

State of Illinois,
County of Cook } ss:
City of Chicago,

In the Municipal Court of Chicago

Pleas, Proceedings and Judgments, before The Municipal Court of Chicago, held in the City of Chicago, in the County of Cook and State of Illinois, at the places in the First District in said city provided by the corporate authorities of said city for the holding of said Court, in the year of our Lord, one thousand nine hundred and fifteen and the Independence of the United States, the one hundred and Fortieth.

Present:

Honorable James C. Martin, One of the Judges of the Municipal Court of Chicago.
Maclay Hoyne, State's Attorney.
Anton J. Cermak, Bailiff.

Attest:

FRANK P. DANISCH,
Clerk.

1058 Be it Remembered, towit: that on the twenty-seventh day of November, A. D. 1915, the following among other proceedings were had in said Court and entered of record therein, to-wit:

Webster Electric Company, a corporation under the laws of West Virginia,
vs
Tesla Emil Podlesak,
} No. 209569 First-class.

1059 Be it Remembered, that to-wit: on the ninth day of November, A. D. 1915, a certain Praecipe was filed in the office of the Clerk of the Municipal Court, in words and figures following to-wit:

1060 The Municipal Court Praecipe—First Class.

State of Illinois,
County of Cook,
City of Chicago,
First District, } ss

The Municipal Court of Chicago

Webster Electric Company, a corporation under the laws of West Virginia,
Plaintiff,
vs
Tesla Emil Podlesak,
Defendant,
} First Class No. 20956
Claim for $70,000.00.

The Clerk of said Court will issue a summons in the above entitled cause to said defendant in a suit of trespass on the case on promises to the damage of said plaintiff in the sum of Seventy Thousand Dollars, directed to the bailiff of said court to execute and make it returnable on Monday the 22nd day of November, A. D. 1915.

LYNN A. WILLIAMS and
LEVINSON, BECKER, CLEVELAND & SCHWARTZ,
Plaintiff's Attorney.

Chicago, November 9th, 1915.

1061 Be It Remembered, that afterwards on the same day, to wit: the ninth day of November, A. D. 1915, a certain writ of summons was issued out of the office of the Clerk of said Municipal Court, under the seal thereof, directed to the Bailiff of said Court to execute, which writ, together with the return of the Bailiff thereon endorsed, were and are in words and figures following, to-wit:

1062 The Municipal Court of Chicago Summons—First Class.

State of Illinois, }
City of Chicago, } ss
First District, }

The People of the State of Illinois, to the Bailiff of the Municipal Court of Chicago—Greeting:

We Command You, to summon Tesla Emil Podlesak if he shall be found in your City personally to be and appear before The Municipal Court of Chicago, at the City Hall, in said City of Chicago, on Monday, the 22d day of November, A. D. 1915. to answer unto Webster Electric Company, a corporation under the laws of West Virginia in a plea of trespass on the case on promises to the damage of said plaintiff, as he say in the sum of Seventy Thousand ($70,000.00) Dollars. And have you then and there this Writ with an endorsement thereon in what manner you shall have executed the same.

Witness, Frank P. Danisch, Clerk of our said court and the seal thereof, at Chicago, aforesaid, this 9th day of November, A. D. 1915.

FRANK P. DANISCH,
Clerk.

(Seal)

1063 RETURN.

Served this writ on the within named defendant Tesla Emil Podlesak by delivering a copy thereof to him and at the same time informing him of the contents thereof in the City of Chicago, this 9th day of November, 1915.

ANTON J. CERMAK,
By EDWARD FLANIGAN, *Deputy.*

1064 Be It Remembered, that to-wit: on the 12th day of November, A. D. 1915, a certain Special Appearance was filed in the office of the Clerk of the Municipal Court, in words and figures following, to wit:

1065 First Class No. 209,569.

State of Illinois }
City of Chicago }

In the Municipal Court

First District.

Webster Electric Company, a corporation under the laws of West Virginia,
Plaintiff,
versus
Tesla Emil Podlesak,
Defendant,

To the Clerk of said Court:—

Please enter my appearance in the above entitled action specially and for the sole purpose of contesting the jurisdiction of the court over my person and over the subject matter of the above entitled action.

Dated November 12th, A. D. 1915.

Yours, etc.,

TESLA EMIL PODLESAK,
In his own proper person

Post Office Address: 1322 Thurston Avenue, Racine, Racine County, Wisconsin.

1066 Be It Remembered, that afterwards, to wit: on the 12th day of November, A. D. 1915, the following among other proceedings were had and entered of record in said Municipal Court, which proceedings were and are in words and figures following, to-wit:

Present:

Honorable James C. Martin—One of the Judges of The Municipal Court of Chicago.
Maclay Hoyne, State's Attorney.
Anton J. Cermak, Bailiff.
Frank P. Danisch, Clerk.

Webster Electric Company a corporation under the laws of West Virginia.
versus
Tesla Emil Podlesak— } Case No. 209569—

On motion of the plaintiff herein, it is ordered that the time for filing Statement of Claim be and it is hereby extended twenty (20) days.

1067 Be It Remembered, that to-wit: on the 27th day of November, A. D. 1915, a certain Notice, Petition and Bond for Removal to United States District Court was filed in the office of the Clerk of the Municipal Court, in words and figures following, to-wit:

1068 State of Illinois
County of Cook
City of Chicago, } ss
First District,

In the Municipal Court of Chicago.

Webster Electric Company, a corporation, under the Laws of West Virginia,
Plaintiff,
vs
Tesla Emil Podlesak,
Defendant, } First Class No. 209,569.

NOTICE.

To Messrs. L. A. Williams, Esq., and Levinson, Becker, Cleveland & Schwartz, Esqs., Attorneys for Plaintiff:

Please Take Notice that On Saturday, November 27, 1915, at the opening of court, in the forenoon, or as soon thereafter as counsel can be heard, we shall present to His Honor Judge Martin, one of the judges of the Municipal Court, the petition of the above named defendant for the removal of the above entitled cause to the District Court of the United States for the Northern District of Illinois, Eastern Division; and

shall at the same time present for approval a removal bond in the same matter; and shall ask for an order for the removal of said cause, in accordance with the prayer of said petition, copies of said petition and bond being hereto attached.

PARKER & KING,
Attorneys for Tesla Emil Podlesak, Defendant.

Received a copy of the above notice and copies of the petition and bond therein mentioned this 26th day of November, A. D. 1915.

LYNN A. WILLIAMS.

1069 State of Illinois } ss
County of Cook }

Edward Voelcker, being first duly sworn on oath deposes and says that he is a clerk in the office of Parker & King, and that he served the within notice upon Levinson, Becker, Cleveland & Schwartz by leaving a true and perfect copy thereof, with copies of petition and bond thereto attached, with one Margaret Anglum, a person in charge of the office of said Levinson, Becker, Cleveland & Schwartz before the hour of four o'clock P. M. on Friday, November 26, A. D. 1915.

EDWARD VOELCKER

Subscribed and sworn to before me this 26th day of November, A. D. 1915.

(Seal)

ORPHA A. RANKIN,
Notary Public.

1070 State of Illinois, }
County of Cook, }
City of Chicago, } ss
First District, }

In the Municipal Court of Chicago.

Webster Electric Company, a corporation under the laws of West Virginia,
Plaintiff,
vs
Tesla Emil Podlesak,
Defendant,
} First Class No. 209,569.

PETITION FOR REMOVAL.

To the Honorable Judges of the Municipal Court of Chicago:

Your Petitioner, Tesla Emil Podlesak, Respectfully shows that he is the defendant in the above entitled cause, and that the matter and amount in controversy in the said cause exceeds, exclusive of interest and costs, the sum of Three Thousand Dollars ($3000.00).

Your petitioner further shows that said suit is of a civil nature, being at common law for the recovery of money in the nature of an action of trespass on the case on promises.

Your petitioner further shows that in said suit there is a controversy which is wholly between citizens of different states which can be fully determined as between them, to-wit, a controversy between your said petitioner and the said plaintiff, Webster Electric Company; that the said Webster Electric Company and your Petitioner are actually interested in said controversy; that your Petitioner, who is the defendant

1071 in said cause, was at the time of the commencement of this suit, and still is, an inhabitant, resident and citizen of the State of Wisconsin, a resident of the County of Racine in said State of Wisconsin, and a non-resident of the State of Illinois; and that the said plaintiff, Webster Electric Company, was at the time of the commencement of said cause, and still is, a corporation organized and existing under and by virtue of the laws of the State of West Virginia, and a citizen and resident of said State of West Virginia, and a non-resident of said State of Wisconsin.

And your Petitioner herewith offers a bond with good and

sufficient surety in the penal sum of Five Hundred Dollars ($500.00), conditioned for its entering in the District Court of the United States for the Northern District of Illinois, Eastern Division, within thirty days from the 27th day of November, A. D. 1915, a certified copy of the record in the above entitled cause, and for paying all costs that may be awarded by said District Court of the United States if said District Court shall hold that this suit was wrongfully or improperly removed thereto.

Your Petitioner further prays this Honorable Court to proceed no further herein, except to make an order of removal as required by law, and to accept the said surety and bond, and to cause the record herein to be removed to the said District Court of the United States for the Northern District of Illinois, Eastern Division, according to the statute in such cases made and provided. And so your petitioner will ever pray, etc.

TESLA EMIL PODLESAK,
Petitioner.

1072 State of Illinois }
County of Cook, } ss

Tesla Emil Podlesak, of lawful age, being first duly sworn, on oath deposes and says that he is the defendant in the above entitled cause; that he has read the foregoing Petition by him subscribed, and knows the contents thereof; and that the matters and things therein stated are true.

TESLA EMIL PODLESAK.

Subscribed and sworn to before me this 26th day of November, A. D. 1915.

(Seal)

OTIS H. WALDO, JR.,
Notary Public.

1073 State of Illinois
County of Cook,
City of Chicago,
First District, } ss

In the Municipal Court of Chicago.

Webster Electric Company, A corporation under the Laws of West Virginia,
Plaintiff,
vs
Tesla Emil Podlesak,
Defendant,
} First Class No. 209,569.

BOND FOR REMOVAL.

Know All Men by These Presents, that we Tesla Emil Podlesak, as Principal, and the Illinois Surety Company, (a corporation organized and existing under the laws of the State of Illinois), as surety, are held and firmly bound unto Webster Electric Company, a corporation organized and existing under the laws of the State of West Virginia, in the penal sum of Five Hundred Dollars ($500.00), lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our successors and assigns, jointly and severally and firmly by these presents.

Witness, our hands and seals this 27th day of November, A. D. 1915.

The condition of the above bond is such that whereas Tesla Emil Podlesak, the principal above named, has petitioned the Municipal Court of Chicago, in the County of Cook, in
1074 the State of Illinois, for the removal of a certain suit at law therein pending, wherein the said Webster Electric Company is party plaintiff, and the said Tesla Emil Podlesak is party defendant, into the District Court of the United States for the Northern District of Illinois, Eastern Division.

Now, therefore, if said bounden Tesla Emil Podlesak shall enter, or cause to be entered, in said District Court of the United States for the Northern District of Illinois, Eastern Division, on or before the 27th day of December, A. D. 1915, a certified copy of the record in said suit, and shall pay all costs that may be awarded by said District Court of the

United States, if said Court shall hold that said suit was wrongfully or improperly removed thereto, and shall do such other proper acts as by the Act of Congress in that behalf are required to be done upon removal of said suit from said Municipal Court of Chicago in said County of Cook, in the State of Illinois, to said District Court of the United States, then this obligation to be void, otherwise of full force and effect.

TESLA EMIL PODLESAK (seal)
ILLINOIS SURETY COMPANY,
By CHAS. E. BROWN,
Attorney in fact.

(seal)

1075 Be It Remembered, that afterwards, to-wit: on the 27th day of November, A. D. 1915, the following among other proceedings were had and entered of record in said Municipal Court, which proceedings were and are in words and figures following, to-wit:

Present:

Honorable James C. Martin—One of the Judges of The Municipal Court of Chicago.
Maclay Hoyne, State's Attorney.
Anton J. Cermak, Bailiff.
Frank P. Danisch, Clerk.

Webster Electric Company, a corporation under the laws of West Virginia,
versus
Tesla Emil Podlesak,
} Case No. 209569—

On motion of the plaintiff herein, it is ordered that the time for filing Statement of Claim be and it is hereby extended ten (10) days.

The defendant herein having filed his petition herein praying that this cause be transferred to the District Court of the United States, and having filed bond herein as provided by law, and it appearing that said petition and bond are in conformity with law, it is ordered that said bond be approved and that this cause be and the same is hereby transferred to the District Court of the United States for the Eastern Divi-

sion of the Northern District of Illinois, and that the Clerk of this Court do forthwith transfer to said District Court a full and complete transcript of all papers and proceedings in this cause.

1076 CERTIFIED TRANSCRIPT OF RECORD.

State of Illinois, } ss
County of Cook, }

I, Frank P. Danisch, Clerk of The Municipal Court of Chicago, in said County and State, and the keeper of the records and files thereof, in the City, County and State aforesaid, do hereby certify the above and foregoing to be a true, perfect and complete transcript of the record in a certain cause lately pending in said court wherein Webster Electric Company, a corporation under the laws of West Virginia, is plaintiff and Tesla Emil Podlesak, is defendant.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said court at Chicago, aforesaid, this Sixteenth day of December, 1915.

FRANK P. DANISCH,
Clerk.

(seal)

1078 DEFTS. EX. 74 E. O. E.

State of Illinois
County of Cook
City of Chicago
First District } ss

IN THE MUNICIPAL COURT OF CHICAGO.

Webster Electric Company, a corporation under the laws of West Virginia,
Plaintiff,
vs
Tesla Emil Podlesak,
Defendant,

No. 32313.
First Class.
No. 209,569.

STATEMENT OF CLAIM.

Plaintiff alleges that for several years next prior to February 5th, 1914, the defendant was employed by the plaintiff in its manufacturing establishment in a confidential capacity, and for a large part of that time had had practical charge of the manufacturing part of the plaintiff's business; that the defendant alone and jointly with his brother, Henry Joseph Podlesak, was the patentee of certain inventions, and that he and his brother also developed and improved certain other inventions while he was so employed by the plaintiff, and he and his brother, individually and jointly, procured patents covering such inventions; that the inventions referred to pertained to the product manufactured by the plaintiff, and through the procurement of the defendant while he was so employed by the plaintiff, these inventions were em-
1079 bodied into the product so manufactured by the plaintiff and the plaintiff's business was to a large extent built up and based upon such inventions; and that the plaintiff expended a vast amount of time and several hundred thousands of dollars in developing said inventions and its said business.

That on February 5, 1914 the defendant and his said brother made and entered into two agreements in writing with the plaintiff, one for convenience designated herein as "License Agreement," and the other for convenience desig-

nated as "License Agreement (Shop Right)," which said agreements were respectively as follows:

1080 LICENSE AGREEMENT.

This Agreement made and entered into this 5th day of February, 1914, by and between Emil Podlesak of Racine, Wisconsin, and Henry Joseph Podlesak of Chicago, Illinois, hereinafter called the parties of the first part, and The Webster Electric Company, a corporation of the State of West Virginia, whose principal office is in the City of Chicago, County of Cook and State of Illinois, hereinafter called the party of the second part, Witnesseth:

That Whereas the parties of the first part, having invented certain new and useful improvements in Inductor Electric Generators for Internal Combustion Motor Ignition, for which certain Letters-Patent of the United States of America have been granted, which all they jointly own, to-wit:—

Number 947,647, issued January 25th, 1910, Inductor Generators for Ignition purposes,

Number 948,483, issued February 8th, 1910, Inductor Generators for Ignition purposes,

Number 1,003,649, issued September 19th, 1911, Inductor Generators for Ignition purposes,

And Whereas the party of the second part is desirous of securing exclusive right and license to manufacture, use and sell the inventions and improvements, described and claimed in above said patents, all or any one of them, the validity of which is admitted, and to bring and maintain suits against infringers of the patent rights covering the said inventions,

1081 within and throughout the United States of America and Territories thereof, and for and during the life of any and all of the patents:

Now, Therefore, in consideration of One Dollar ($1.00) by the party of the second part to the parties of the first part, in hand paid, and of the covenants, and agreements of the party of the second part hereinafter expressed and to be kept and performed, the parties of the first part do hereby grant unto the party of the second part the exclusive right and license to manufacture, use and sell the inventions or improvements, and each and every one of them, described, set forth and claimed in said patents, numbers 947,647, 948,483 and 1,003,649, within and throughout the United States of America and Territories and possession thereof, for and during the term

of said patents or any of them; and the parties of the first part agree that they have good right and lawful authority to grant said exclusive license, and that they have not heretofore parted with any right, license or privilege inconsistent therewith, and that they will not, while this exclusive license to the party of the second part is in force, make, use or sell said inventions or grant, or give permission to, or encourage, others to do so.

Second: The parties of the first part agree to and with the party of the second part that they and each of them will aid and assist the party of the second part in any suit or proceedings brought under any of the said patents, or for the infringement of any patents by reason of the manufacture, use or sale, by the party of the second part of the inventions described in said patents; provided, however, that said
1082 parties of the first part shall not be called upon to pay out or expend any money in any suit or proceeding relating to the said inventions, and the parties of the first part hereby appoint the attorney for the party of the second part as their agent and attorney for the purpose of joining them as parties complainant where necessary or desirable, in any suit which the party of the second part may wish to bring on account of the infringement of any of said Letters-patent, the said attorney for the party of the second part to have the power to execute as the attorney and agent of the parties of the first part any papers which may be necessary or convenient to the commencement and maintenance of any such suit, it being expressly understood and agreed, however, that the parties of the first part are not to be put to any expense or to be required to expend any moneys, on account of any such infringement suits to which they may be made parties complainant, and it is expressly understood and agreed, further, that the said parties of the first part shall be exempt from liability in damages or court costs resulting from any law suits in which the parties of the first part may thus be joined with the party of the second part, the party of the second part agreeing to assume the payment of any and all damages and court costs that may result from any such suit.

Third: The party of the second part agrees to mark each of the devices manufactured under this license agreement, with the words "Patented," with the surname of the inventors, and with the dates of any of the said patents containing claims readable upon such devices.

1084 Fourth: The party of the second part agrees to keep a correct account of all devices made and sold under this license, whether sold as a part of and attached to other machines or apparatus or not so attached, containing or embodying the above said improvements or inventions, or any of them which books of account shall be open to the inspection of the parties of the first part or their attorney or agent, at all reasonable times.

Fifth: The party of the second part further agrees to make quarterly reports, in writing, to the parties of the first part, said reports to cover the periods terminating respectively, upon the last days of September, December, March and June of each year, each report to be furnished within fifteen days from the termination of the period covered thereby, and showing the total number and selling prices of devices embodying the improvements shown and claimed in said patents or any of them, which it has sold and delivered as above stated, during the preceding quarter, which report, when required, shall be verified by the oath or affidavit of the president or some other officer of the Company or corporation comprising the party of the second part.

Sixth: The party of the second part agrees that it will on the day of each and every report, pay to the parties of the first part, jointly, as a royalty or license fee, five per cent (5%) of all moneys or the equivalent thereof, which they may have received or that may be due them from the sales of or in exchange for the said devices sold and delivered during the preceding quarter. It is further expressly understood and agreed that the said devices manufactured embodying 1084 the above improvements, or any of them are not to be sold for less than a fair and reasonable price, based upon manufacturing and trade conditions.

Seventh: If the party of the second part fails to keep accounts, make reports and pay royalties as hereinbefore provided, or if during the year ending upon the last day of September, 1914, the royalties agreed to be paid under this contract shall not amount to Twenty-five Hundred Dollars ($2,500.00) or if during the year ending upon the last day of September in subsequent years, during the life of this contract, the royalties agreed to be paid under this contract shall not amount to Twenty-five Hundred Dollars ($2,500.00), it be-

ing understood that in the event of any deficiency in the amount of royalties, earned as figured on the basis of sales made, the parties of the second part may make up any such deficiency so that the total amount paid at the end of each year shall not be less than twenty-five hundred dollars ($2,500.00), or, if the party of the second part fails or refuses to take proper steps to stop infringements, if any there should be, and become known to it, or any of the claims of any of said patents, or if it should not manufacture and sell for use at least five thousand (5000) pieces of any or more of the herein said devices during each and every year of the life of this contract, then the parties of the first part shall have the right to give notice, in writing, to the party of the second part, of its default, specifying in the said notice the respect or particular in which said second party is claimed to be in default, and if said second party shall not, after the re-
1085 ceipt of said notice, remedy such default within thirty days, if one there be, the parties of the first part, may, in case they so desire to do, thereupon terminate said license, by notice in writing, to the party of the second part, but such notice or termination shall not relieve the party of the second part from the payment of any and all royalties and guaranteed amounts accrued prior to the receipt of such notice of termination or such amounts as may have accrued prior to the termination of manufacture of said devices.

Eighth: The party of the second part agrees that it will diligently proceed in and about the business of making and offering for sale one or more of the inventions and improvements covered by this license; that it will advertise the same, and use all proper and reasonable efforts to create a demand therefor, and to supply the demand when created.

Finally: It is agreed that this agreement shall extend to and be binding upon the heirs, assigns and legal representatives of the parties of the first part, and the successors and assigns of the party of the second part.

In Witness Whereof, the parties of the first part have hereunto set their hands and seals, and the party of the second part has caused its co porate name to be hereto signed by its President, and its corporate seal attested by its Secretary to

be hereunto affixed, all as of the day and year first above written.

(Signed) HENRY JOSEPH PODLESAK, (Seal)
(Signed) EMIL PODLESAK, (Seal)
(Signed) THE WEBSTER ELECTRIC CO., (Seal)
By T. K. WEBSTER,
President.

Attest:
S. A. LOEB,
Acting Secretary.
Witnesses:
KATE DEMPSEY,
ARTHUR L. SCHWARTZ.

1086 LICENSE AGREEMENT.

(Shop Right)

This Agreement, made and entered into this 5th day of February, 1914, by and between Emil Podlesak of Racine, Wisconsin, and Henry Joseph Podlesak, of Chicago, Illinois, hereinafter called the parties of the first part, and The Webster Electric Company, a corporation of the State of West Virginia, whose principal office is in the City of Chicago, County of Cook and State of Illinois, hereinafter called the party of the second part, Witnesseth:

That Whereas the parties of the first part having invented certain and various new and useful improvements in Ignition Devices for Gas Engines, for which they jointly own certain Letters Patent and pending applications for Letters Patent of the United States of America, described as follows:

No. 1,022,642, issued April 9, 1912, Low Tension Sparking Mechanism, (Henry J. Podlesak).

No. 1,055,076, issued March 4, 1913, Current Generators and Ignitors, (Emil Podlesak).

No. 1,056,360, issued March 18, 1913, Inductor Generators for Ignition purposes.

Application, Serial No. 734,143, filed November 29, 1912, Ignitor Devices for Explosive Engines.

Application, Serial No. 668,153, filed December 27, 1911, Magneto Machines.

Application, Serial No. 639,738, filed July 21, 1911, Magneto Machines:—

1087 And Whereas the party of the second part is desirous of securing a shopright and license to manufacture, use,

and sell the inventions and improvements, described and claimed in above said patents, and applications for patents, all or any one of them, the validity of which patents, granted to to be granted, is admitted, and to bring and maintain suits against infringers of the patents rights, covering the said inventions, within and throughout the United States of America and Territories thereof, and for and during the life of any and all of the patents, and patents that may be granted, on any of the applications described above, or any of them:

Now, Therefore, in consideration of One Dollar ($1.00) by the party of the second part to the parties of the first part in hand paid, and of the covenants and agreements of the party of the second part, hereinafter expressed and to be kept and performed, the parties of the first part do hereby grant unto the party of the second part a shop right and license to manufacture, use, and sell the inventions or improvements, and each and every one of them, described, set forth or claimed in said patents, numbers 1,022,642, 1,055,076 and 1,056,360, and said applications, serial numbers 734,143, 668,153 and 639,738, and any division or divisions thereof, within and throughout the United States of America and Territories and Possessions thereof, for and during the term of said patents or any of them; and the parties of the first part agree that they have good right and lawful authority to grant the said shop
1088 right and license, and that they have not heretofore parted with any right, license or privilege inconsistent therewith, and that they will not, while this shop license to the party of the second part is in force, give or grant shop licenses to others to make, use or sell herein said inventions, expressly reserving, however, the right to themselves, to make, use and sell the hereinsaid inventions.

Second: The parties of the first part agree to and with the party of the second part that they, and each of them will aid and assist each other in the prosecution of said applications and the obtaining of patents thereon and in any interference proceeding relating to their right of priority to said inventions, and in any suit or proceeding brought under any of the said patents or for the infringement of any patents by reaso of the manufacture, use or sale, by the party of the second part of the inventions described in said patents or applications; provided, however, that said parties of the first part shall not be called upon to pay out or expend any money in any suit or proceeding relating to the said inventions, and the parties of the first part hereby appoint the attor-

ney for the party of the second part as their agent and attorney for the purpose of joining them as parties complainant where necessary or desirable, in any suit which the party of the second part may wish to bring on account of the infringement of any of said Letters Patent or any patent which may be granted
1089 upon their aforesaid applications, the said attorney for the party of the second part to have the power to execute as the attorney and agent of the parties of the first part any papers which may be necessary or convenient to the commencement and maintenance of any such suit, it being expressly understood and agreed, however, that the parties of the first part are not to be put to any expense or to be required to expend any moneys, on account of any such infringement suits to which they may be made parties complainant, and it is expressly understood and agreed, further, that the said parties of the first part shall be exempt from liability in damages or court costs resulting from any law suits in which the parties of the first part may thus be joined with the party of the second part, the party of the second part agreeing to assume the payment of any and all damages and court costs that may result from any such suits.

Third: The party of the second part agrees to mark or label each of the devices manufactured under this license agreement in conformity with the provisions of Section 4900 United States Revised Statutes and with the surname of the inventors.

Fourth: The party of the second part agrees to keep a correct account of all devices made and sold under this license, whether sold as a part of and attached to other machines or apparatus or not so attached, containing or embodying the above said improvements, or inventions, or any of them, which books of account shall be open to the inspection of the parties of the first part of their attorney or agent at all reasonable times.

1090 Fifth: The party of the second part further agrees to make quarterly reports, in writing, to the parties of the first part, said reports to cover the periods terminating respectively upon the last days of September, December, March, and June of each year, each report to be furnished within fifteen days from the termination of the period covered thereby, and showing the total number of devices embodying the improvements shown and claimed in said patents granted or to be granted, or any of them, which it has sold and deliv-

ered as above stated, during the preceding quarter, which reports shall also show the names of the purchasers or devices embodying the inventions, or any of them, set forth and claimed in said patents, Nos. 1,022,642 and 1,055,076, and the number of such devices sold to each purchaser, and shall be verified by the oath or affidavit of the President or some other officer of the Company or corporation comprising the party of the second part, if so required by the parties of the first part.

Sixth: The party of the second part agrees that it will, except as hereinafter provided, use the devices manufactured under the shop license only in connection with, or for repairs to, the devices manufactured under license which is covered by the agreement made on February 5th, 1914, by which the parties of the first part give to the party of the second part the exclusive and sole right to manufacture ignition devices covered by patents, No. 947,647 of January 1091 25, 1910, Inductor Generators for Ignition Purposes, No. 949,483 issued February 8, 1910, Inductor Generators for Ignition Purposes and No. 1,003,649, issued September 19, 1911, Inductor Generators for Ignition Purposes, and that whenever the devices covered by this shop right and license are made and sold and delivered not as a part of, or for use in connection with, the devices manufactured and sold under the aforesaid exclusive license dated February 5th, 1914, then the party of the second part agrees that it will on the day of each and every report pay to the parties of the first part, jointly, as a royalty or license fee, five per cent (5%) of all moneys or the equivalent thereof, which they may have received or that may be due them from the sales of or in exchange for the devices covered by this shop right and license sold and delivered during the preceding quarter. It is further expressly understood and agreed that the said devices manufactured embodying above improvements, or any of them, are not to be sold for less than a fair and reasonable price, based upon manufacturing and trade conditions.

Seventh: If the party of the second part shall fail to keep accounts, make reports, and pay royalties, all as hereinbefore provided, then the parties of the first part shall have the right to give notice, in writing, to the party of the second part, of its default, specifying in the said notice the respect or particular in which said second party is claimed to be in default,

and if said second party shall not within thirty (30) days
1092 after the receipt of said notice, remedy or remove said default, if one there be, the parties of the first part may, in case they so desire to do, thereupon terminate said license by notice, in writing, to the party of the second part, but such notice or termination shall not relieve the party of the second part from the payment of any and all royalties that may, as hereinbefore provided, have accrued prior to the receipt of such notice of termination or such amounts as may have accrued prior to the termination of manufacture of said devices.

Eighth: The party of the second part, with the approval, in writing, of the parties of the first part, shall have right to grant shop right or license for the manufacture, use and sale of devices embodying the inventions described and claimed in said patents No. 1,022,642 and No. 1,055,076, to makers of or dealers in, gas engine, and gas engine accessories, but such shop rights or licenses so granted by the party of the second part shall be on and with the same terms and limitations as hereinbefore set forth, namely: that the devices made under such shop right license shall be used only in connection with, or for repairs for or to, devices made under the hereinbefore mentioned patents No. 947,647,—948,483,—1,003,649 and 1,056,360, and any patents that may be granted on the hereinbefore mentioned applications, Serial Nos. 734,143, 668,153 and 639,738, or any of them, and in no other way. The parties of the first part may approve any such shop right or license, to be granted by the party of the second part, either by signing such shop right or license or by giving written
1093 approval, either personally or by attorney, or agent.

Ninth: The party of the second part agrees that it shall not permit or encourage other parties to manufacture, use, or sell devices covered by hereinbefore mentioned patents, or patents that may be granted on hereinsaid applications, or any of them, except as, and on terms and limitations hereinbefore set forth, relative to said shop licenses under patents No. 1,022,642 and No. 1,055,076. It is further agreed and understood that this shop license becomes terminated in the case or event the license given in the said agreement of February 5, 1914, becomes terminated by manner therein provided for.

Finally: It is agreed that this agreement shall extend to and be binding upon the heirs, assigns and legal representa-

tives of the parties of the first part, and the successors and assigns of the party of the second part.

In Witness Whereof, the parties of the first part have hereunto set their hands and seals, and the party of the second part has caused its corporate name to be hereto signed by its President, and its corporate seal, attested by its secretary, to be hereunto affixed, all as of the day and year first above written.

HENRY JOSEPH PODLESAK (Seal)
EMIL PODLESAK (Seal)
THE WEBSTER ELECTRIC COMPANY
By T. K. WEBSTER,
President.

Attest:
S. A. LOEB,
Acting Secretary.
Witnesses:
KATE DEMPSEY
ARTHUR L. SCHWARTZ.

1094 That the inventions referred to and covered by the patents referred to in the foregoing agreements are the inventions embodied in the product manufactured by the plaintiff as hereinabove set forth.

That by virtue of the foregoing agreements, to defendant and his said brother, Henry Joseph Podlesak covenanted and agreed with the plaintiff that they would not give or grant to anyone the right to make, use or sell the said inventions or any of them.

That the defendant and his said brother, in violation of their duty and obligations as set forth in the foregoing agreements, on or about the 4th day of September, 1915, made and entered into a certain agreement in writing with the Splitdorf Electric Company, a corporation organized and existing under the laws of the State of New Jersey, and the Sumter Electrical Company, a corporation organized and existing under the laws of the State of South Carolina, which said agreement is in words and figures as follows:

1095 Memorandum of agreement made and entered into this 4th day of September, A. D. 1915, by and between Emil Podlesak of Racine, Wisconsin, and Henry Joseph Podlesak of Chicago, Illinois, parties of the first part, and the Splitdorf Electric Company, a corporation organized and existing under the laws of the State of New Jersey, having its

principal office and place of business located in the City of Newark, County of Essex, in said State, and the Sumter Electrical Company, a corporation, organized and existing under the laws of the State of South Carolina, having its principal office and place of business in the City of Sumter County of Sumter, in said State, said corporations jointly parties of the second part;

Whereas the parties of the first part are the present joint owners of certain inventions relating to inductor electric generators for internal combustion motor ignition, and of certain letters patent granted therefor as follows: No. 949,647, issued January 25, 1910; No. 948,483, issued February 8, 1910; and 1,003,649, issued September 19, 1911, all for Inductor Generators for Ignition purposes; and of certain other inventions relating to ignition devices for gas engines, for which applications have been filed and letters patent have been granted as follows: No. 1,022,642, issued April 9, 1912, Low Tension Sparkling Mechanism; No. 1,055,076, issued March 4, 1913, reissued February 9, 1915, as No. 13,878, for Current Generators and Ignitors; No. 1,056,360, issued March 18, 1913, for Inductor Generators for Ignition Purposes; applications serial No. 734,143, filed November 29, 1912, for Igniter Devices for Explosive Engines, patented June 30, 1914, as No. 1,101,956; application serial No. 639,738, 1096 filed July 21, 1911, Magneto Machine, patented May 26, 1914, as No. 1,098,052, application serial No. 668,153, filed December 27, 1911, as a division of original application No. 639,738, patented June 2, 1914, as No. 1,098,754; and application serial No. 668,153, filed December 27, 1911, Magneto Machines, patented as No. 1,109,754; and

Whereas said parties of the first part have heretofore granted licenses under said patents to the Webster Electric Company of Racine, Wisconsin, as evidenced by three certain written instruments dated respectively the 5th day of February 1914, the 5th day of February, 1914, and the 20th day of January 1915, of which true copies are hereto annexed and marked respectively Exhibits, A. B. and C; and

Whereas the parties of the second part having been nominated by F. C. Manning under his option dated August 20, 1915, and being his assignees thereof, are desirous of acquiring the entire interest in the aforesaid inventions, letters patent and applications, together with all rights to manufacture, use and sell said inventions subject only to the

said licenses heretofore granted to the Webster Electric Company, also the entire interest of the parties of the first part in the aforesaid agreements with the said Webster Electric Company and in the business of manufacturing and selling magneto ignition apparatus for internal combustion engines, together with the good will appertaining to the said business of the parties of the first part, in part represented by the association of their names or either of them with said business or with apparatus manufactured or to be manufactured and sold under the aforesaid letters patent and applications on said agreements; also all reissues granted or to be granted or said letters patent and patents granted
1097 on said applications, as well as any improvements on said inventions, the applications and patents therefor.

Now therefore be it known that for and in consideration of the sum of Twenty-five Thousand Dollars ($25,000.00) to them in hand paid, the receipt of which is hereby acknowledged, and for the further considerations hereinafter set forth, the parties of the first part have sold, assigned, transferred, set over and conveyed, and by these presents do hereby sell, assign, transfer, set over and convey unto the parties of the second part jointly, the entire right, title and interest in, to and under each and every the hereinbefore mentioned inventions and improvements, letters patent, and applications for letters patent, with all divisions, reissues and extensions thereof, including the right to use and recover to their own use for infringement of the same, whether committed before or after the date hereof, this assignment being subject only to the licenses heretofore granted to the Webster Electric Company, also the entire right, title and interest in, to and under or arising out of the aforesaid license agreements with the Webster Electric Company, and the royalties and other profits flowing therefrom after the date hereof, as well as the entire interest and good will of the parties of the first part in the business of manufacturing and selling magneto ignition apparatus for internal combustion engines and any other apparatus described or claimed in said letters patent and applications and included in said license agreements; the same to be held and enjoyed by the said parties of the second part, or the survivor of them, their or its successors or assigns, as fully, freely and
1098 entirely as they might have been held and enjoyed by the parties of the first part had not this assignment and sale thereof been made.

It is understood and agreed that the preparation and the prosecution of all applications for patents on inventions hereby conveyed or agreed to be conveyed, including both pending and new applications, original, divisions, reissue, and extension, shall be by the attorney or attorneys for the parties of the second part, on their designation, and the parties of the first part hereby appoint said attorneys as their attorneys for such purpose, and agree that they will at all times keep the parties of the second part or their said attorneys fully informed as to inventions they may make which might fall within the terms of this agreement, and that they will at all times aid and assist in the preparations and prosecution of said applications, and in any proceedings ancillary thereto, all, however, without expense to themselves for costs or attorneys' fees, said expense to be borne entirely by the parties of the second part. The parties of the first part also agree that upon demand of the parties of the second part or said designated attorneys, they will execute assignments satisfactory to said attorneys of all said inventions and improvements not herein specifically designated but included within the scope hereof.

In further consideration of the said transfer and the faithful performance by the parties of the first part of the covenants herein contained, the parties of the second part for themselves, their survivor, successors or assigns, agree to pay an additional sum of Forty Thousand Dollars $40,-
000.00) in four equal installments of Ten Thousand
1099 Dollars ($10,000.00) each payable one installment on the first day of each of the years 1916, 1917, 1918 and 1919.

In further consideration of the payment to them made, which includes a special sum of Five Thousand Dollars ($5,000.00) for this purpose, which said sum is deemed by the parties hereto to be adequate in the premises, and as ancillary to the foregoing assignment and sale, and in order to protect the parties of the second part, their survivor, successors and assigns in the full and complete realization and enjoyment of the rights, title and interest thus conveyed, the parties of the first part do hereby jointly and severally covenant and agree that they and each of them shall not engage in the manufacture or sale of magneto ignition apparatus for internal combustion engines for and during the period of five years from and after the date of these presents, throughout the territory covered and included within the monopoly granted by the aforesaid letters patent, it being the intention

of the parties hereto that the field of business of the parties of the second part includes the whole of and is co-extensive with said territory.

It is understood and agreed that nothing in this covenant shall operate to prevent the parties of the first part from engaging in business involving either the use of a magneto generator for other purposes than internal combustion engine ignition, or involving the accomplishment of internal combustion engine ignition by other means than magneto generator or dynamo; provided said business does not involve any infringement upon any claims of the patents hereby assigned or agreed to be assigned to the parties of the second part, the validity of which is expressly admitted and warranted by the parties of the first part. It is further
1100 understood and agreed that in the event of any breach of this covenant not to compete by the parties of the first part or either of them, they shall thereupon become jointly and severally liable to the parties of the second part in the sum of Five Thousand Dollars ($5,000.00) as liquidated damages, and in addition thereto for all actual damages in excess thereof, sustained by the said parties of the second part, their survivor, successors or assigns, by reason of said breach, such damage to be assessed and determined by a court of proper jurisdiction and pending such determination all sums remaining in the hands of the parties of the second part and which would otherwise be due and payable under this agreement to the parties of the first part to be retained by the parties of the second part as security for the payment of the aforesaid damages.

The parties of the first part hereby warrant that they have the right to manufacture, use and sell the inventions described and claimed in letters patent No. 1,022,642 April 9, 1912, No. 1,055,076, March 4, 1913, reissued February 9, 1915 as No. 13,878, and 1,056,360, March 18, 1913, also applications serial No. 734,143, filed November 29, 1912, serial No. 668,153, filed December 27, 1911, and serial No. 639,738, filed July 21, 1911; that they are the owners of the said letters patent, and also of all the other letters patent and inventions mentioned in the aforesaid agreements with the Webster Electric Company, Exhibits A, B and C; that they have the right to make this assignment, including all of said patents and agreements; that they have not previously made any assignment or granted any license, shop right or other rights of any kind or character, of, to, in or under the aforesaid patents, saving and

excepting only the rights granted under agreements Exhibits A and B to the Webster Electric Company, and that
1101 when they made and entered into said agreements with the said Webster Electric Company, it was understood and agreed on the part of the Webster Electric Company that the parties of the first part hereto reserved and retained to and in themselves all the rights, title and interest herein and hereby warranted and that the same were assignable by the parties of the first part at their own will and pleasure.

It is understood and agreed that this contract is made under and to be construed according to the laws of the State of New Jersey, and is fully executed and delivered in the City of Newark, in said State.

In witness whereof the parties of the first part have hereunto severally subscribed their names and affixed their seals in triplicate this 4th day of September, A. D. 1915; and the parties of the second part have severally caused their names to be signed and their corporate seals to be affixed hereto at the times and places indicated below, by their respective officers to that end duly empowered.

(Signed) HENRY J. PODLESAK (Seal)
(Signed) EMIL PODLESAK (Seal)

SPLITDORF ELECTRIC COMPANY

By .....

President.

Place .....
Date .....

Attest:

.....

Secretary.

SUMTER ELECTRICAL COMPANY

By .....

President.

Place .....
Date .....
Attest:

.....

Secretary.

City of Washington, } ss
District of Columbia, }

On this 4th day of September, 1915, before me personally appeared Emil Podlesak and Henry Joseph Podlesak, to me known to be the persons described in and who executed the foregoing instrument and acknowledged that they executed the same as their free act and deed.

.....

Notary Public.

County of } ss
State of }

I, ... a Notary Public in and for said County in said State, hereby certify that ..... whose name as President of the Splitdorf Electric Company, a corporation, is signed to the foregoing conveyance, and who is known to me, acknowledged before me on this day that, being informed of the contents
1103 of the conveyance, he, as such officer and with full authority, executed the same voluntarily for and as the act of said corporation. Given under my hand this ..... day of September, 1915.

.....

Notary Public.

State of } ss
County of }

I, ... a Notary Public in and for said County in said State, hereby certify that Charles Thomas Mason, whose name as President of the Sumter Electrical Company, a corporation, is signed to the foregoing conveyance, and who is known to me, acknowledged before me on this day that, being informed of the contents of the conveyance, he, as such officer and with full authority, executed the same voluntarily for and as the act of said corporation. Given under my hand this ..... day of September, 1915.

.....

Notary Public.

1104 That said Splitdorf Electric Company and Sumter Electrical Company, were at the time said agreement was made, competitors of the plaintiff, and the defendant and his said brother, by making and entering into said agreement with said companies violated their duties and obligations under their said agreements of February 5, 1914, with the plaintiff, and thereby the plaintiff has been damaged and continues to be damaged in a very large amount of money, the exact amount of which the plaintiff cannot at this time state, but asks to have said damages assessed herein.

LEVINSON, BECKER, CLEVELAND & SCHWARTZ,
Attorneys for Plaintiff.
76 W. Monroe Street,
Business address.

State of Illinois }
County of Cook } ss
City of Chicago, }

Walter Brown, being first duly sworn, on oath states that he is the Vice-President of the plaintiff in the above entitled cause; that the said cause is a suit upon contract for the payment of money; that the nature of the plaintiff's demand is as set forth in the foregoing statement of claim and that the amount due the plaintiff for its damages in unliquidated and unascertained and for that reason the plaintiff cannot tell the exact amount of such damages, but asks that the same be assessed in this proceeding.

WALTER BROWN.

Subscribed and sworn to before me this 26th day of December, 1915.

JEROME N. FRANK,
(Seal) *Notary Public in and for Cook County, Illinois.*
(Endorsed) Filed Dec. 28, 1915. T. C. MacMillan, Clerk.

1106 DEFTS. EX. 75. E. O. E.

IN THE DISTRICT COURT OF THE UNITED STATES

For the Northern District of Illinois,

Eastern Division

Webster Electric Company, a corporation, under the laws of West Virginia,
Plaintiff,
vs
Tesla Emil Podlesak,
Defendant,
} Law No. 32313.

Whereas all matters in difference, including the above entitled action, have been amicably settled and adjusted, and mutual releases having been duly executed and delivered, by and between the parties above named,

Now, therefore, it is hereby stipulated and agreed by and between the parties hereto, through their respective attorneys, that the above entitled action has been fully settled and all claims of the plaintiff therein satisfied; that said action be and the same hereby is dismissed without costs to either or any of the parties, and that an order of dismissal be entered on the application of any party pursuant to this stipulation, without other or further notice.

Dated, January 16th, 1918.

LEVINSON, BECKER, & SCHWARTZ,
Attorneys for Plaintiff.
PARKER & KING,
Attorneys for Defendant.

On reading and filing the above stipulation, it is ordered that said action be and the same hereby is dismissed pursuant thereto, without costs to either party.

(Endorsed) Filed Jan. 25, 1918, T. C. MacMillan, Clerk.

1108 DEFTS. EX. 76, E. O. E.

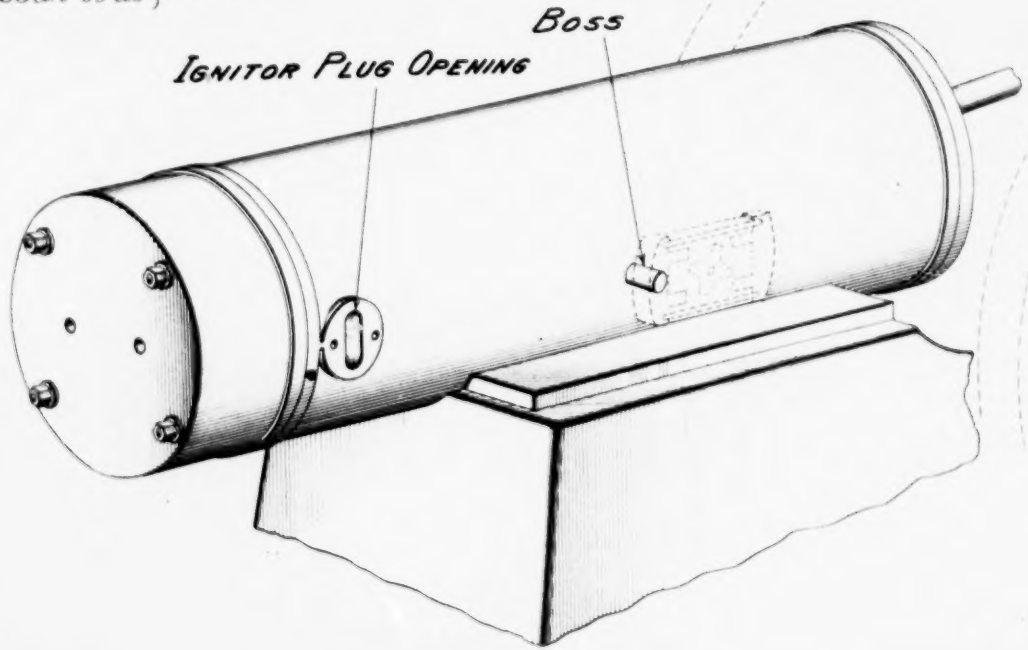
Friday, Jan. 25, 1918.

Carpenter, J.

Webster Electric Company,
vs
Tesla Emil Podlesak, } 32313.

Upon stipulation of the respective parties, this day filed herein, it is ordered by the Court that the above entitled cause be and the same hereby is dismissed without costs to either party.

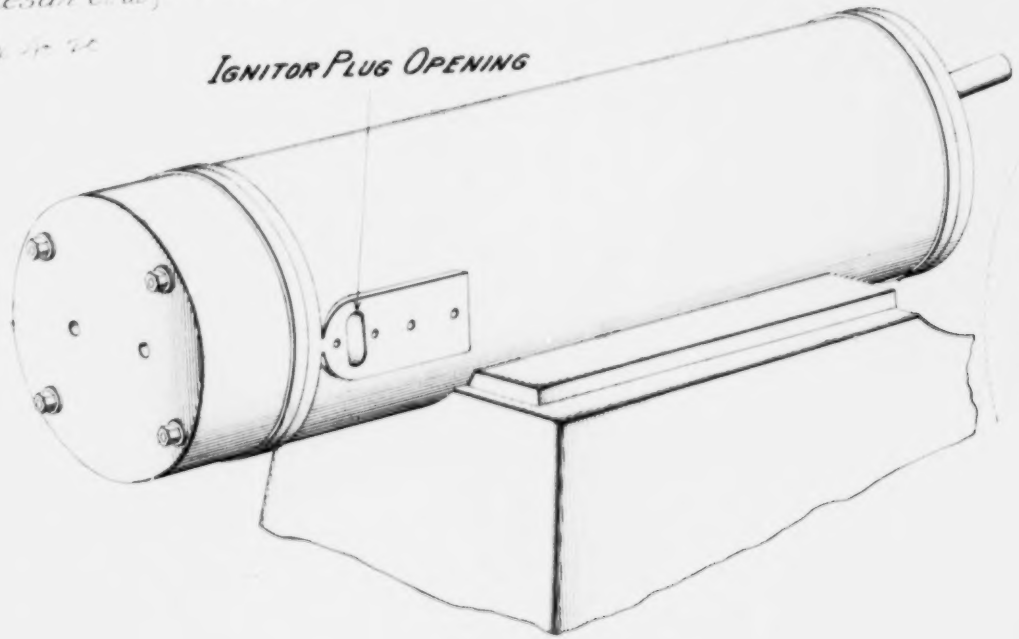
Webster Electric Co.
vs
Henry J. Podlesak et al
} In Equity
No. 553.



Eastern Division

Webster Electric Co.
vs
Henry J. Podlesak et al

In Equity
No. 553



Defendants Exhibit No 51.

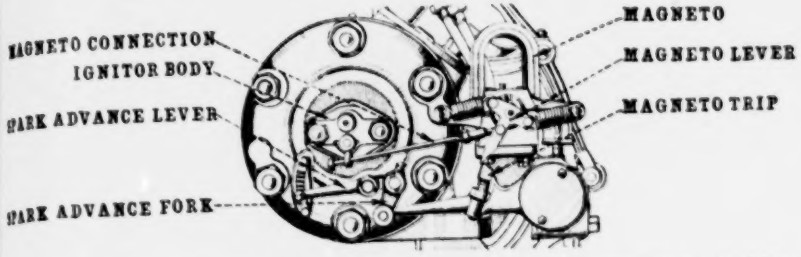


Illustration No. 5 — Showing Spark Advance Lever in Retarded or Starting Position; Magneto Lever about to be tripped

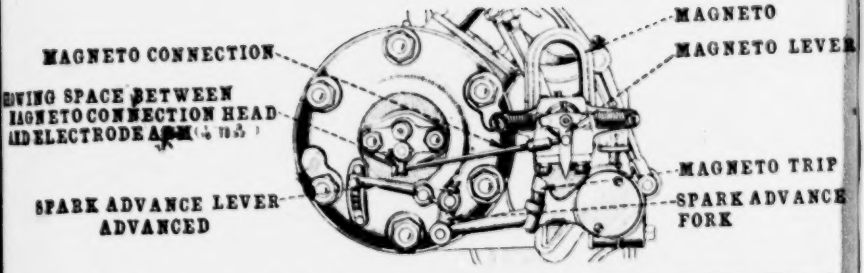


Illustration No. 6 — Showing Spark Advance Lever advanced to Running Position; Magneto Lever in Normal Position when Engine is at rest.

No. 635,506. Patented Oct. 24, 1899.

R. E. OLDS.

ELECTRIC IGNITER FOR GAS ENGINES.

(Application filed Apr. 20, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig 2.

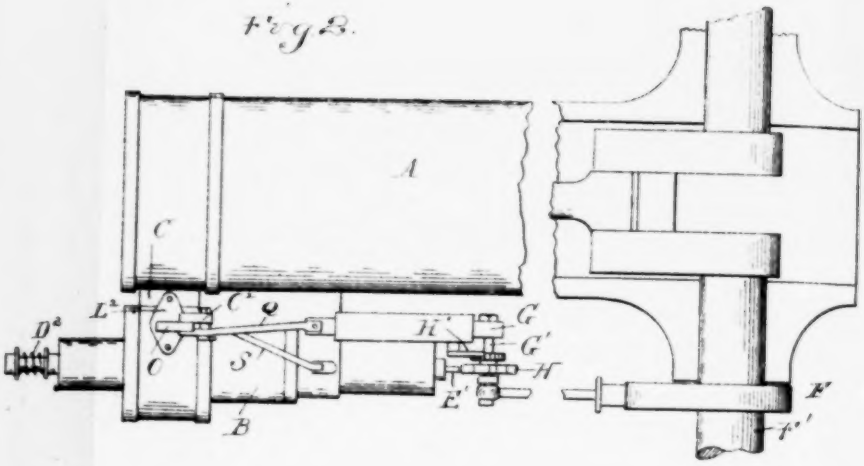
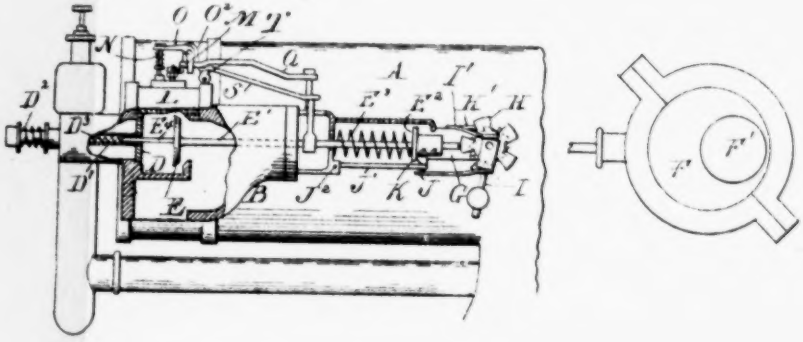


Fig 1.



Witnesses
Otto F. Barth
Lionel Battersby

Inventor
Ransom E. Olds.
By Wm. H. Sprague & Co.
Attys.

50

No. 635,506. Patented Oct. 24, 1899.

R. E. OLDS.

ELECTRIC IGNITER FOR GAS ENGINES.

(Application filed Apr. 20, 1898.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

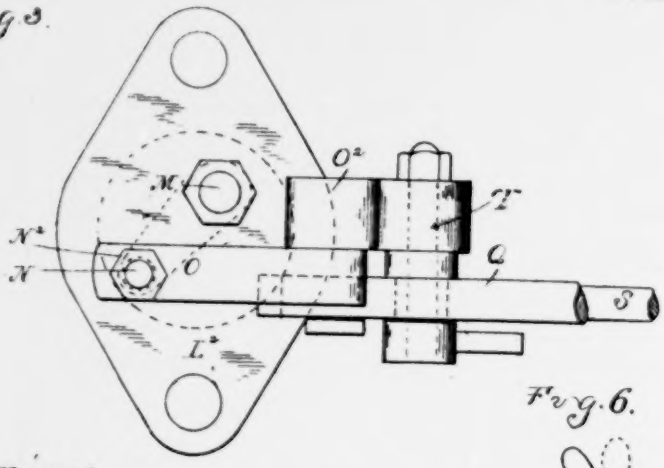


Fig. 6.

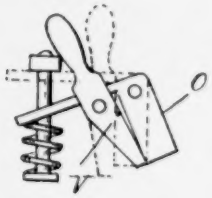


Fig. 4.

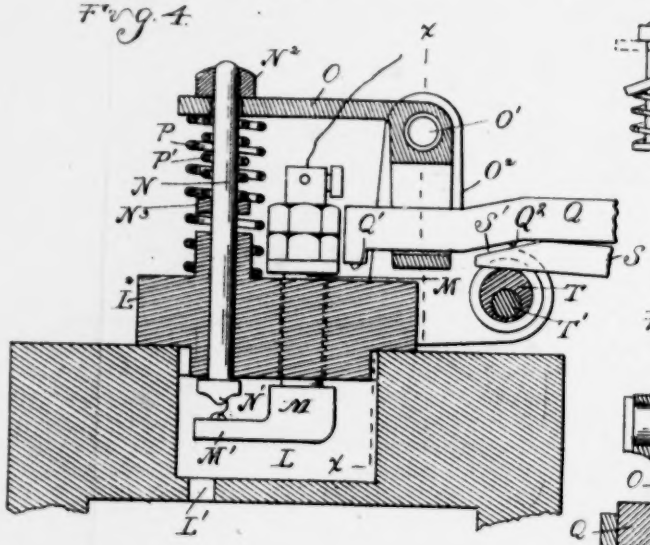
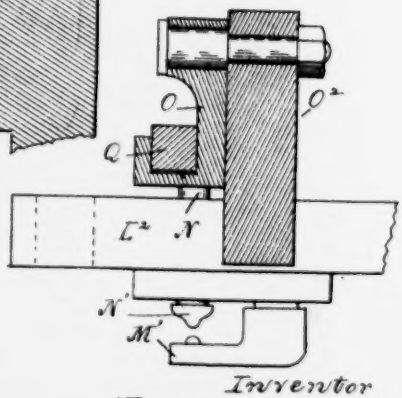


Fig. 5.



Witnesses
Otto F. Barth
Simon Battersby

Inventor
Ransom E. Olds
By Thos. G. Sprague & Son
Attys.

UNITED STATES PATENT OFFICE.

RANSOM E. OLDS, OF LANSING, MICHIGAN.

ELECTRIC IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 635,506, dated October 24, 1899.

Application filed April 20, 1898. Serial No. 678,222. (No model.)

To all whom it may concern:

Be it known that I, RANSOM E. OLDS, a citizen of the United States, residing at Lansing, in the county of Ingham and State of Michigan, have invented certain new and useful Improvements in Electric Igniters for Gas or Hydrocarbon Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved construction of an electric igniter and to means for governing the production of the spark, whereby in engines where the gas admission into the cylinder is under the control of a regulator no spark will be produced when the gas is not admitted, as will be the case when the engine exceeds its normal rate of speed.

To this end my invention consists in the peculiar construction, arrangement, and operation of a fixed and a movable electrode provided with means for actuating said movable contact by the movement of the engine, and, further, in a regulating device whereby said movement is controlled by the movement of the exhaust-valve, all as more fully hereinafter described, and shown in the drawings, in which—

Figure 1 is a side elevation, partly in section, of a gas-engine to which my invention is shown applied. Fig. 2 is a plan thereof. Fig. 3 is an enlarged plan of the electrical igniter. Fig. 4 is a vertical section thereof. Fig. 5 is a section on line x x, Fig. 4.

The engine represented in the drawings and to which my present invention is shown to be applied is the one described in United States Letters Patent No. 565,786. Briefly described, its construction and operation are as follows:

A is the cylinder.

B is the valve-chest.

C is a passage leading from the valve-chest into the cylinder.

D is the inlet-valve, controlling the inflow of the vapor from the valve-chest into the passage C, and E is the exhaust-valve, controlling the outflow of the exhaust from the passage C, through the valve-chest, into the atmosphere. The exhaust-valve E is secured upon a valve-stem E', which carries a collar E^2, and a spring E^3 upon this valve-stem tends to automatically seat the exhaust-valve. The induction-valve D has a valve-stem D′, which carries a coil-spring D^2, arranged to automatically seat the induction-valve. The valves D and E are placed opposite each other and move in opposite directions to open and close their respective ports. The exhaust-valve controls the opening of the inlet-valve by means of an extension E^4 of its valve-stem projecting loosely into the valve-stem D′ and abutting against a spring D^3 seated therein.

The exhaust-valve is operated by an eccentric F on the engine-shaft F′, which reciprocatingly actuates a slide G, carrying on a shaft G′ a notched wheel H, so arranged that at every reciprocation of the shaft a dog H′, acting through a ratchet on the wheel H, causes this wheel to turn intermittently and alternately present its full face or a notch against the end of the valve-stem E′, and thereby causing the opening of the exhaust-valve at every other stroke only, as required by the operation of this type of engine.

The induction-valve is opened by the suction created in the cylinder by the movement of the piston, and it is automatically closed after induction has taken place by the spring D^2. When the exhaust-valve is open, however, its stem E^4 compresses the spring D^3, and thereby prevents any opening of the induction-valve. The opening of the latter is therefore dependent upon the closing of the exhaust-valve. Based upon this relation of the two valves a regulating device is provided whereby the induction-valve does not open when the engine exceeds its normal speed. To this end the slide G carries a pendulum-weight I, which is prevented from vibrating freely by a spring I′ pressing against the squared upper end of the pendulum-rod. This pendulum carries an arm J, extending just below a latch-bar J′, pivotally secured at J^2 and adapted to engage with a projecting shoulder K on the fixed collar E^2, all so arranged that when the engine is going at too great a speed the pendulous movement of the weight I lifts the latch-bar J′, through the medium of the arm J, sufficiently to engage the shoulder K, as shown in Fig. 1, and thereby prevent the exhaust-valve from closing, as in the normal operation of the engine, and the induction-valve in turn therefore remains

closed and no induction of gas takes place until the engine has slowed down to its normal speed.

My invention is applied to this engine in the following manner: L is the igniting-chamber, communicating through a passage L' with the cylinder, and L^2 is a cover removably closing the top of this chamber. In this cover is secured, suitably insulated therefrom, the fixed electrode M, to which one terminal of the electric circuit for producing the spark is connected. N is the other electrode. This extends through a guide-bearing in the cover oppositely to an arm M' on the fixed electrode. The electrode N is provided at its lower end with an enlargement or stop N', and at its upper end it has a head or stop N^2, and O is a bell-crank pivotally secured at O' to a standard O^2 and engaging with the electrode N. The electrode N has two coil-springs P P', the former interposed between the bell-crank and the cover and the latter between the bell-crank and a stop or collar N^3 on the electrode. The other arm of the bell-crank is formed with a guide-bearing, through which loosely slides the free end of an arm Q, which is provided with the hook Q'. The opposite end of the arm Q is connected to a slide G, which in turn is secured to the rod of the shaft G', all so arranged that the arm Q partakes in the reciprocating movement of the eccentric F. Beneath the arm Q is located another arm S, the free end of which is supported by an eccentric rest T, while its opposite end is connected to the stem of the exhaust-valve, and consequently partakes in the movement of said valve. The free end of this arm is provided with a bevel S', and a corresponding bevel Q^2 is formed on the under side of the arm Q.

In practice the igniter being arranged and constructed as shown and described it is intended to operate as follows: In the forward movement of the eccentric F the arm Q will be carried in the same direction and cause its hook Q' to engage the bell-crank O and rock the same on its pivot. The rock-arm pressing on the spring P' will thus push the electrode N into the gas-chamber into contact with the electrode M', and a further movement of the bell-crank will merely compress the springs P and P' until the bevel Q^2 of the arm Q will strike the bevel S' of the arm S, and thereby lift the arm Q and disengage its hook from the bell-crank. At this movement the spring P, being under compression, will instantly react and cause the free arm of the bell-crank to fly against the head N^2, which acts as a stop, and thereby causes a sudden separation of the electrodes, which causes the production of the igniting-spark. In the normal operation the spark, however, will be produced only at every other revolution of the shaft F', as by the opening of the exhaust-valve in the succeeding revolution of the shaft the arm S, which moves with it, is carried forward enough to cause its bevel to lift the arm Q and disengage it from the bell-crank, that it cannot actuate the bell-crank to produce a spark. The same thing of course will take place when by the action of the regulator the exhaust-valve is prevented from closing, as it will do when the engine exceeds its prescribed rate of speed, and thus the regulator prevents the production of a spark when there is no gas to explode, and consequently the battery-power is not wasted, as it would be otherwise. The spring P' being normally compressed draws the head N' of the removable electrode tight against the under side of the cover, and thereby prevents any gas from leaking out, and with the adjustments provided for both electrodes any wear may be taken up.

T is an eccentric adjustably sleeved upon the screw-bolt T', which is secured to the standard O^2. This eccentric forms a vertically adjustable rest for the arm 3, and by its adjustment the point of ignition may be easily regulated.

In the drawings I have shown handle or lever V for actuating the bell-crank O by hand in starting the engine.

What I claim as my invention is—

1. In an electric igniter, the combination of a fixed electrode, a longitudinally-sliding electrode provided with two stops, an actuating-lever, one arm of which loosely engages said electrode between said stops, a spring interposed between the lever and one of said stops, a spring urging the lever in one direction and means for actuating said lever in the other direction and suddenly releasing the same.

2. In an electric igniter, the combination of a fixed electrode, a longitudinally-sliding electrode, a stop therefor to limit its movement from the fixed electrode, an actuating lever, one arm of which loosely engages said electrode, two stops on the sliding electrode for actuating the same in opposite directions by the movement of said arm of the lever, a spring interposed between said arm and one of said stops, a spring urging said lever in one direction, and a hooked arm loosely engaging with the other arm of the lever and adapted to actuate said lever in the other direction.

3. In an electric igniter, the combination with the ignition-chamber and fixed electrode inclosed within said chamber, of a longitudinally-sliding electrode projecting into said chamber and adapted to contact with the fixed electrode, a stop on the outer end of said sliding electrode, a lever, one arm of which loosely engages said sliding electrode beneath said stop, a stop on the electrode beneath said arm of the lever, a spring interposed between said arm and last-mentioned stop, a spring urging the lever to withdraw the sliding electrode from contact with the fixed electrode, a stop on the lower end of the sliding electrode to limit the movement of said lever, and means for actuating the lever.

4. In an electric igniter, the combination with the ignition-chamber and fixed electrode inclosed therein and provided with an arm, of a longitudinally-sliding electrode projecting into said chamber, a stop on the lower end of said electrode within the ignition-chamber, a bell-crank lever, one arm of which loosely engages said sliding electrode, two stops on said sliding electrode, one above and one below said arm of the lever, a spring interposed between the last-named stop and the arm of the lever, a spring adapted to urge said lever in one direction and a reciprocating arm loosely engaging the other arm of the lever and provided with a hook for actuating the lever.

5. In an electric igniter, the combination with the ignition-chamber and fixed electrode inclosed therein, of the sliding electrode N provided at its lower end with the enlargement or stop N' inclosed within the ignition-chamber and adapted to seat against the wall thereof, the stops N^2 N^3 on said sliding electrode, the lever O, one arm of which engages loosely with the sliding electrode between said stops, the spring P' interposed between said lever and the stop N^3, the spring P urging the lever in one direction, the reciprocating arm Q engaging in a guide-bearing on the other arm of the lever and provided with the hook Q' and means for releasing said hook from the lever.

6. In an electric igniter, the combination with the movable electrode and the lever arranged to move said electrode in one direction, an arm operated by the engine to actuate said lever in said direction, means automatically controlled by the movement of the exhaust-valve to release said arm from the lever and a spring to automatically move the lever in the other direction when released.

7. In a gas-engine, having its exhaust-valve controlled by a regulator, the combination of an electric igniter having its movable contact operated by a connection with a movable part of the engine, and means for controlling said connection by the movement of the exhaust-valve.

8. In a gas-engine having an automatically-operating inlet-valve and an automatically-closing exhaust-valve controlling said inlet-valve, the combination with a regulator controlling the closing of the exhaust-valve, of an electric igniting device operated by the movement of the engine, and means operated by the movement of the exhaust-valve for controlling the igniting device.

9. In a gas-engine, the combination of an automatically-operating inlet-valve, an automatically-closing exhaust-valve controlling said inlet-valve, a regulator controlling the closing of said exhaust-valve, an electric igniter having a movable contact actuating connection for operating said contact by the movement of the engine, the hooked arm Q in said connection and the arm S connected to the stem of the exhaust-valve, said arms Q and S having the bevels Q^2 and S' operating to disconnect the arm Q under control of the exhaust-valve.

10. In a gas-engine igniter, the combination of the sliding electrode, the lever arranged to move said electrode in one direction, the spring actuating said lever in the other direction, the reciprocating arm Q, the hook on said arm adapting it to engage with and move said lever, the arm S operated by the movement of the exhaust-valve, the eccentric rest T supporting said arm, and the bevels Q^2 and S' on said arms operating to disengage the arm Q from the lever under the control of the exhaust-valve.

In testimony whereof I affix my signature in presence of two witnesses.

RANSOM E. OLDS.

Witnesses.
CHARLES F. HAMMOND
RALPH J. GARLICK.

No. 773,062. PATENTED OCT. 25, 1904.

R. & J. COOPER.

ELECTRIC IGNITER FOR GAS ENGINES.

APPLICATION FILED FEB. 14, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 2.

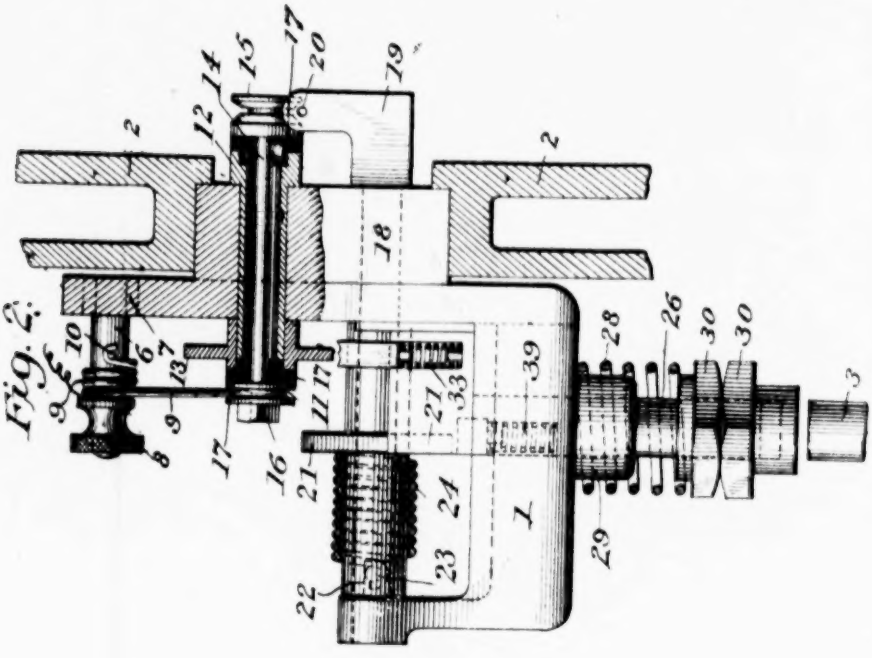
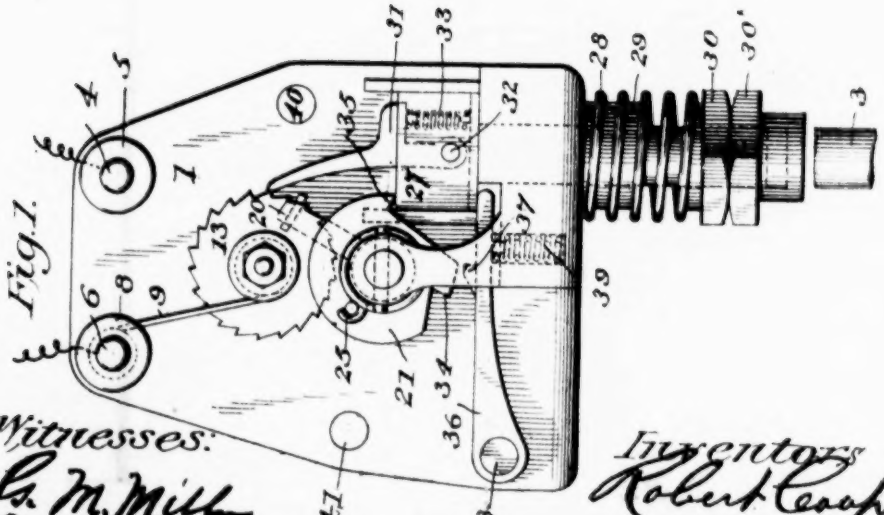


Fig. 1.



Witnesses:
G. M. Mill
Peter Waugaman

Inventors
Robert Cooper
John Cooper

No. 773,962. PATENTED OCT. 25, 1904.

R. & J. COOPER.

ELECTRIC IGNITER FOR GAS ENGINES.

APPLICATION FILED FEB. 14, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

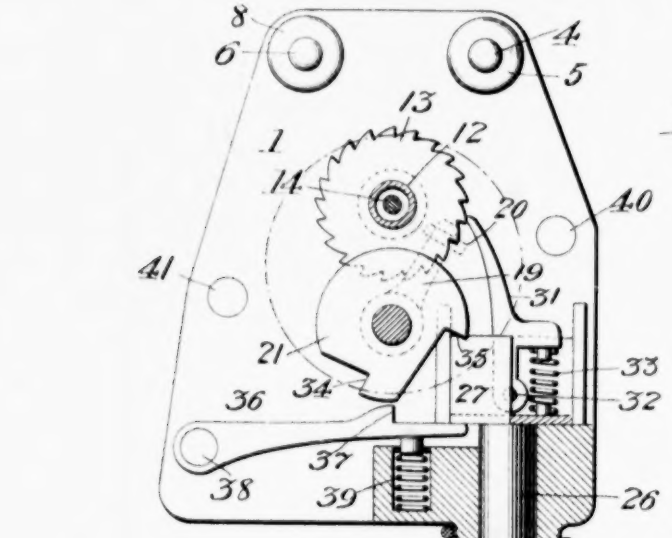


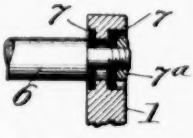
Fig. 3.

Fig. 5.



Fig. 4.

Fig. 6.



Witnesses:
H. L. Littlefield
L. M. Sugar.

Inventors:
Robert Cooper
John Cooper
By
Robert Cooper
Their Atty.

No. 773,062. Patented October 25, 1904.

UNITED STATES PATENT OFFICE.

ROBERT COOPER AND JOHN COOPER, OF SALTSBURG, PENNSYLVANIA.

ELECTRIC IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 773,062, dated October 25, 1904.

Application filed February 14, 1902. Serial No. 94,052. (No model.)

To all whom it may concern:

Be it known that we, ROBERT COOPER and JOHN COOPER, citizens of the United States, residing at Saltsburg, Indiana county, Pennsylvania, have invented new and useful Improvements in Igniting Devices for Explosive-Engines, of which the following is a specification.

Our invention relates to all classes of igniters for explosive-engines which produce a spark by the separation of electrodes within the combustion-chamber. In the more common form of this class of igniters the same points or parts of the electrodes are brought together in the same spot every time the circuit is closed and are liable to and do become sufficiently insulated as not to allow of sufficient current to be flowing in the circuit as will be necessary to cause a spark capable of igniting the charge when the electrodes are separated. This insulation may be due to corrosion caused by the intense heat of the contact points or parts of the electrodes or by some foreign substance getting between them. The object of our invention is to overcome these serious objections. This is accomplished by an improved arrangement, construction, and combination of parts whereby a good contact is insured every time the electrodes are brought together and whereby the wearing away of the contact points or parts of the electrodes will not materially effect the time of ignition.

We shall now more fully describe our invention with reference to the accompanying drawings, in which—

Figure 1 is an elevation of the igniter. Fig. 2 is an end elevation, part in section, of the same igniter. Fig. 3 is an elevation, part in section, of the igniter, also showing a portion of the engine and the way the igniter receives its motion from the crank-shaft. Fig. 4 is a portion of the disk 21, showing clutch 22. Fig. 5 is an end view of Fig. 4. Fig. 6 is an elevation, part in section, of the stud 6, showing the method of insulating it from the body of the igniter.

Similar figures refer to similar parts throughout the several views.

1 represents the frame or body of the igniter, which contains all the working parts.

2 shows a portion of the combustion-chamber to which the igniter may be attached.

3 is a reciprocating rod which imparts motion to the igniter.

4 is a stud to which one of the electric wires is attached by thumb-screw 5.

6 is a stud insulated from the igniter-body by bushing 7, composed of any insulating material fitted tightly into igniter-body, as shown. To stud 6 is fastened the other electric wire by means of thumb-nut 8.

7ª is a nut on stud 6 to hold it in position.

A helical spring 9 passes over stud 6, one end of which is held from rotating by pin 10, and the other end presses against grooved disk 11.

12 is a hollow cylindrical shaft having a shoulder on the inner side which bears against the igniter-body 1 in such a manner as to form an air-tight seat. Said shaft 12 is free to rotate in igniter-body 1.

13 is a ratchet-wheel pressed on shaft 12.

14 is a small shaft passing through shaft 12 and having a disk 15 on the inner end and a nut 16 and grooved disk 11 on the outer end. Shaft 14 is insulated from shaft 12 by any insulating material 17 and is held firmly in position by nut 16. Disk 15 forms an insulated revolving contact-electrode.

18 is a movable shaft passing through igniter-body 1 and having a shoulder on the inside which presses against the igniter-body to form an air-tight seat, also having a projecting arm 19, provided with a point 20 and so arranged that when brought in contact with disk 15 it completes the electric circuit. Shaft 18 has mounted upon it a disk 21, provided with a clutch 22 on outer end. Disk 21 is free to rotate through a portion of a revolution until clutch 22 engages pin 23, which is through shaft 18.

24 shows a spring coiled around hub of disk 21, one end of which is fastened to disk 21 by pin 25 and the other end attached to pin 23.

26 is a rod passing through igniter-body, as shown, and having a rectangular head 27.

28 is a spring under compression coiled around boss 29 and pressing against igniter-body and nut 30.

30' is a special nut arranged to lengthen or shorten the rod 26.

31 is a pawl pivoted in head 27 on pin 32.

33 is a spring which presses pawl 31 against ratchet-wheel 13.

34 and 35 indicate catches on disk 21.

36 is a lever provided with catch 37 and mounted on stud 38.

39 is a spring which presses lever 36 toward disk 21.

40 and 41 are holes through which screws may be put to fasten the igniter to the combustion-chamber.

42 is the crank-shaft of the engine.

43 is a gear securely fastened to crank-shaft 42.

44 is a gear double the diameter of gear 43 and is securely fastened to shaft 45.

46 is an eccentric securely fastened to gear 44.

47 is a portion of the crank-case.

48 is a bushing in crank-case 47 to support rod 3.

The operation of the igniter is as follows: The eccentric 46 receives its motion from the crank-shaft 42 through the gears 43 and 44 and travels at one-half the speed of the crank-shaft and in the direction of the arrow shown. It will be seen that as the eccentric 46 rotates the rod 3, which is too close to shaft 45 to allow the highest point of the eccentric to pass under it without raising it, will be lifted to some degree from its present position. The amount of this lift can be changed by lengthening or shortening the end of the rod nearer the eccentric 46. As the rod 3 rises it is brought in contact with the nut 30', which is screwed fast to rod 26. As rod 26 rises it will be seen that head 27, which is fast to rod 26, will be brought in contact with disk 21 at point 35. As it continues to ascend the disk 21, which is loose on shaft 18, is rotated. As it rotates the spring 24, which is fast to disk 21 and to pin 23 in shaft 18, rotates shaft 18 and causes electrode 20 to come in contact with disk-electrode 15, which halts the shaft 18 in its motion and closes the circuit. As the head 27 still ascends the pawl 31, which is mounted therein, is brought in contact with one of the teeth in the ratchet-wheel 13, mounted on shaft 12, and the wheel 13 is rotated. The rotation of the wheel 13 causes the disk-electrode to rotate, and thereby removes all dirt or insulating matter from between the electrodes. The spring 33 presses the pawl 31 against ratchet 13. Disk 21 is rotated until point 34 on disk 21 has reached point 37 on lever 36. It will be seen that as the head 27 is raised up it would be taken away from lever 36, and as lever 36 has a spring 39 pressing it upward as soon as point 34 on disk 21 passes over point 37 on lever 36 that point 37 would fly up and engage point 34 on disk 21. The clutch 22 on disk 21 would pa away from pin 23 in shaft 18 as soon as sha 18 is halted in its rotating motion. Wh the points 34 and 37 lock or a trifle there ter, the eccentric 46 has reached its highe point and begins to descend. The rod 26 forced down by spring 28 as the eccentr passes down. When rod 26 descends, he 27 is brought down on lever 36, and as it co tinues to descend the point 37 releases poi 34 and spring 24 drives disk 21 forward ra idly until clutch 22 engages pin 23, which in parts the momentum of the disk 21 to sha 18, which in turn separates the electrodes and 20, thereby causing a spark.

Having fully described our invention, wh we claim as new, and desire to secure by Le ters Patent, is—

1. In an electric igniting device for ga engines, the combination of a frame, a ratche wheel mounted on a hollow shaft carrying a insulated disk-electrode, a solid shaft carryi a second electrode, both electrode-shafts pas ing inside the combustion-chamber, and th latter having an arm mounted thereon to co tact said second electrode with the disk-ele trode, mechanism to move the solid shaft t make and break contact of said electrodes an means to operate the ratchet-wheel after th electrodes are brought into contact, substan tially as described.

2. In an electric igniting device for ga engines, the combination of a frame, an insu lated stud mounted on said frame, a ratche wheel mounted on a hollow shaft carrying a insulated disk-electrode, a solid shaft carry ing a second electrode, both electrode-shaft passing inside the combustion-chamber, th latter having an arm mounted thereon to co tact said second electrode with the disk-ele trode, mechanism to move the solid shaft t make and break contact of said electrodes means to operate the ratchet-wheel after th electrodes are brought into contact and mean for connecting said insulated stud with sai insulated electrode, substantially as described

3. In a gas-engine igniting device, a fram carrying a revoluble insulated electrode, an an oscillatory solid-shaft electrode, both pass ing inside the combustion-chamber, a ratchet wheel mounted on the revoluble electrode, disk 21 carrying a clutch 22 mounted on the oscillatory solid-shaft electrode, a pin 2 through said solid-shaft electrode, a spring 24 attached to disk 21 and to pin 23, catches 34 and 35 cut in disk 21, a lever 36 and all ar ranged and adapted to operate the revolubl and oscillatory electrodes, substantially as de scribed.

4. In igniting devices for gas-engines, a combination of a frame carrying an oscilla tory electrode and a revoluble electrode, an insulated stud mounted in said frame, means for connecting said insulated stud to said insu lated electrode and means for operating the

the revoluble electrode after the oscillatory and revoluble electrodes connect, substantially as described.

5. In a gas-engine igniting device the combination of a frame 1 a revoluble electrode 14, an oscillatory electrode 18, a hollow shaft 12, a ratchet-wheel 13, a disk 21, a spring 24, a clutch 22, a pin 23, a pawl 31, a lever 36, a spring 39, a rod 26, a spring 28, a head 27, a operate the igniter, substantially as described.

In testimony whereof we have hereunto affixed our signatures in the presence of two witnesses.

ROBERT COOPER.
JOHN COOPER.

Witnesses:
G. M. MILLER,
PETER WAUGAMAN.

764

No. 754,286. PATENTED MAR. 8, 1904.

F. DICKINSON.

SPARKER.

APPLICATION FILED JUNE 15, 1903.

NO MODEL.

Fig. 1.

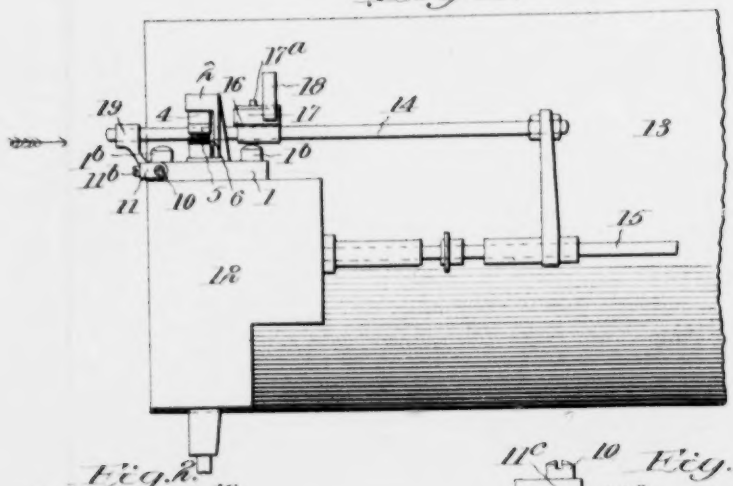


Fig. 2.

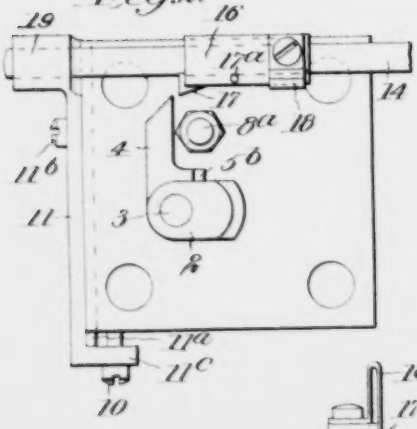


Fig. 3.

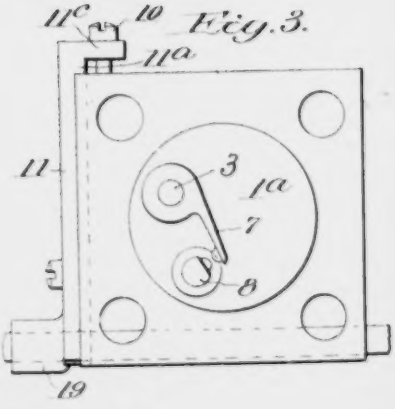
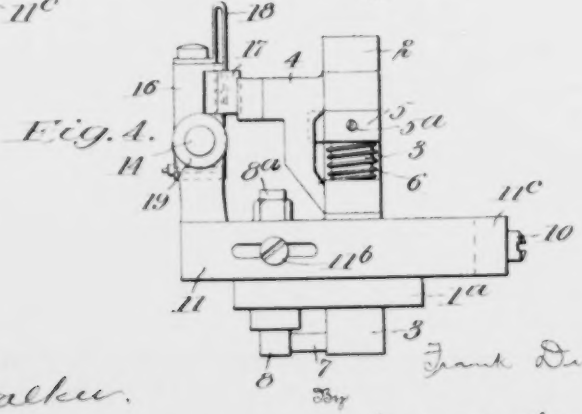


Fig. 4.



Witnesses:
C. H. Walker.
Geo. E. Lew

Inventor
Frank Dickinson
By
Miles B. Stevens & Co.
Attorneys

No. 754,286. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

FRANK DICKINSON, OF SPRINGPORT, MICHIGAN.

SPARKER.

SPECIFICATION forming part of Letters Patent No. 754,286, dated March 8, 1904.

Application filed June 15, 1903. Serial No. 161,535. (No model.)

To all whom it may concern:

Be it known that I, FRANK DICKINSON, a citizen of the United States, residing at Springport, in the county of Jackson and State of Michigan, have invented new and useful Improvements in Sparkers, of which the following is a specification.

This invention relates particularly to sparkers for igniting gas-engines, and has for its object to provide an improved construction whereby the time of sparking may be varied and this while the engine is in motion.

A further object is to produce a very quick separation of the electrodes and consequent hot spark.

In the accompanying drawings, Figure 1 is a side elevation of the igniter, in connection with a portion of the engine-cylinder. Fig. 2 is a top plan view of the igniter detached. Fig 3 is an inside or bottom plan thereof, and Fig. 4 is an end elevation thereof looking in the direction of the arrow in Fig. 1.

The sparker herein described is mounted on and produces a spark in the valve casing or chamber 12, fixed to the side of the cylinder 13, and 1 indicates the base-plate having a reduced portion 1^a fitted in and through an opening in the top of the valve-casing, to which the plate is secured by screws 1^b. The rock-shaft 3, which carries the movable electrode 7, extends through this plate and finds its bearings therein and in a bracket 2, projecting from the upper side of the plate. The stationary electrode is indicated at 8, having a stem 8^a extending through and insulated from the plate. Loosely mounted upon the shaft 3 is a yoke-hammer 4, the arms of which have eyes through which the shaft 3 extends. Between the arms of one lever the anvil 5 is sleeved upon the shaft and is made fast thereto by a set-screw, (indicated at 5^a.) The anvil has a projection or head 5^b, which is adapted to be struck by the engaging hammer 4, as more fully hereinafter described. At 6 is indicated a spring coiled around the shaft and having its ends attached, respectively, to the anvil 5 and one arm of the lever 4. The spring acts to make the hammer hit the anvil and also by its upward or outward pressure against the anvil, which is fast to the shaft, to maintain a gas-tight joint between the shaft and the plate 1^a.

The push-rod for operating the sparker is indicated at 14, and it may receive its motion from any suitable source. It is shown connected by an arm to the valve-rod 15. The rod 14 carries a head 16, having a catch 17, pivoted by a pin 17^a to the head. The engaging hammer 4 projects in the path of the catch in the reciprocation of the rod. Pressing against the rear end of the catch is a flat spring 18, which yields to permit the catch to snap back over the end of the hammer on the back motion. The free end of the push-rod 14 is carried in a guide-bearing 19, projecting from a timing-slide 11. This slide is movable sidewise with respect to the line of the push-rod and has a guide-rib 11^a, which works in a groove in the edge of the plate 1, where it is retained by a screw 11^b, which extends through a slot in the slide. The end of the slide is offset around the corner of the plate, as at 11^c, to give a bearing for the adjusting set-screw 10, the foot of which is tapped into the edge of the plate 1. By adjusting the screw the slide is moved back and forth, thereby changing the lap of the engaging hammer 4 with respect to the catch 17, and consequently the time of the release of the rock-shaft and sparking points.

In operation the thrust of the push-rod causes the catch 17 to engage the end of the hammer 4 and turns the same and with it the shaft 3 through the spring 6 and anvil 5 until the electrode 7 comes in contact with the electrode 8. Further movement of the push-rod and hammer is absorbed by the spring 6, and the hammer leaves the anvil-head 5^b. When the point of release is reached, the hammer 4 flies back and hits the head 5^b, throwing the anvil back and with it the rock-shaft. This gives a very quick separation of the electrodes and a bright fat spark, because the hammer 4 hits the anvil 5 while in motion. On the back stroke of the push-rod the catch 17 snaps over the beveled end of the hammer 4 and resumes its position for the next stroke. As above indicated, the time of firing may be varied by shifting the slide 11 to change the

lap and time of release of the catch and the hammer, and this can be done while the engine is in motion.

It is to be understood that the scope of the invention is not limited further than is indicated in the accompanying claim.

What I claim as new, and desire to secure by Letters Patent, is

In a sparking mechanism, the combination with a plate carrying the electrodes, of a push-rod actuating the movable electrode, and an adjustable slide mounted on the plate and having a guide-bearing for the rod.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK DICKINSON.

Witnesses:
ANDY M. JOHNSON,
ROSS W. BURGESS.

No. 820,535. PATENTED MAY 15, 1906.

G. J. WEBER.

ELECTRIC IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED FEB. 16, 1903.

2 SHEETS—SHEET 1.

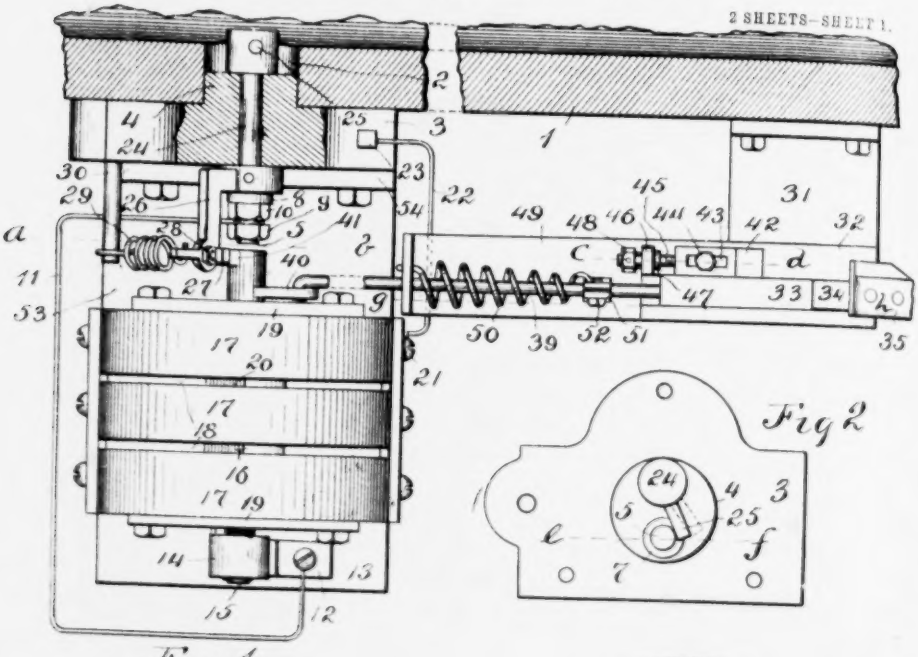


Fig 1

Fig 2

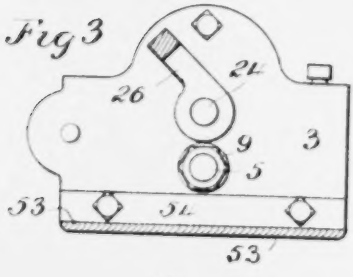


Fig 3

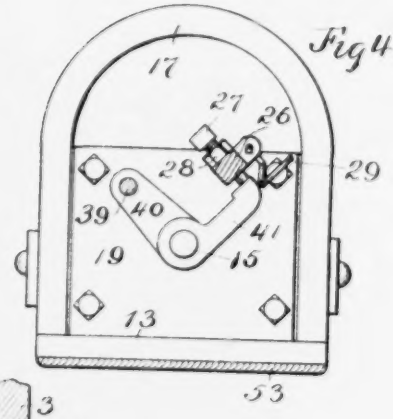


Fig 4

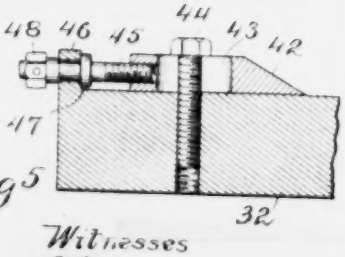


Fig 5

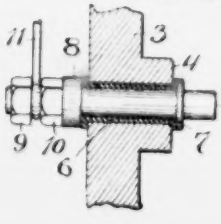


Fig 6

Witnesses
R. E. Hamilton.
H. F. Watkins.

Inventor
George J. Weber
By Warren L. House
His Attorney

No. 820,535.

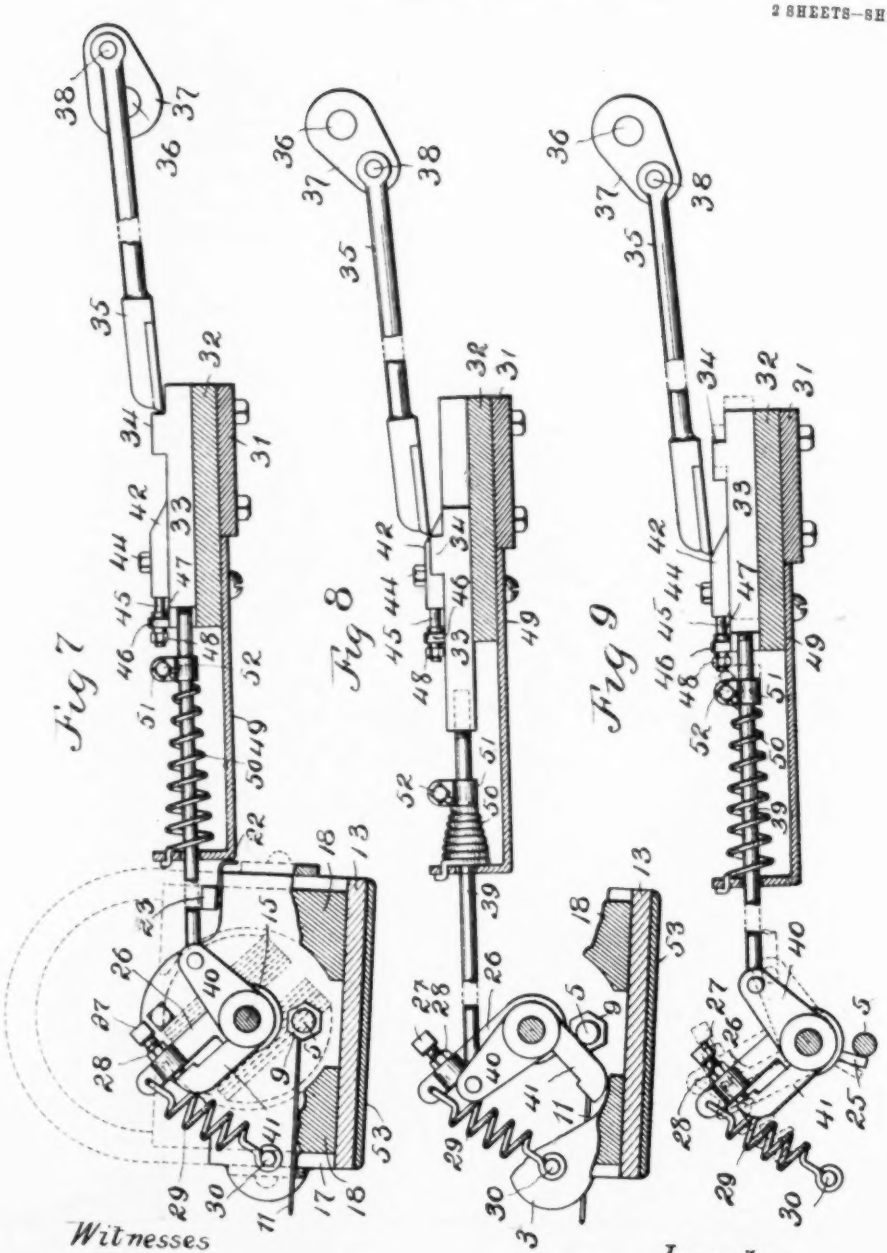
PATENTED MAY 15, 1906.

G. J. WEBER.

ELECTRIC IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED FEB. 16, 1903.

2 SHEETS—SHEET 2.



Witnesses
R. C. Hamilton.
H. F. Wilkins.

Inventor
George J. Weber
By Warren D. House.
His Attorney.

GEORGE J. WEBER, OF KANSAS CITY, MISSOURI.

ELECTRIC IGNITER FOR EXPLOSIVE-ENGINES.

No. 820,535. Specification of Letters Patent. Patented May 15, 1906.

Application filed February 16, 1903. Serial No. 143,661.

all whom it may concern:

Be it known that I, GEORGE J. WEBER, a izen of the United States of America, re- ing in Kansas City, in the county of Jack- n and State of Missouri, have invented a w and useful Improvement in Electric Ig- ers for Explosive-Engines, of which the llowing is a specification, reference being d therein to the accompanying drawings, rming a part thereof.

My invention relates to improvements in ctric igniters for explosive-engines.

The object of my invention is to provide electric-igniter mechanism with novel eans for producing the spark for firing the harge.

My invention provides, further, certain ad- sting means by which the time of produc- g the spark may be accurately predeter- ined.

My invention provides, further, timing eans adjustable while the engine is run- ng, thus permitting the ignition of the harge at the proper time for obtaining the reatest efficiency from the explosion of the harge.

Other novel features are hereinafter fully escribed and claimed.

In the accompanying drawings, which ustrate my invention, Figure 1 represents a lan view of the igniting mechanism, some of e parts being broken away and others hown in horizontal section. Fig. 2 is an in- de elevation view of the block in which are ounted the two electrodes. Fig. 3 is a ver- al sectional view taken on the dotted line *a* of Fig. 1 looking toward the engine-cylin- er. Fig. 4 is a similar view taken on the ame dotted line, but looking in the opposite irection. Fig. 5 is a vertical sectional view f the adjustable timing mechanism, taken on he dotted line *c d* of Fig. 1. Fig. 6 is a hori- ontal sectional view taken on the dotted line f of Fig. 2, showing the stationary electrode nd some of the parts connected therewith. ig. 7 is a view, partially in vertical section nd partially in elevation, of the igniting echanism, the slide and armature-shaft be- g shown in the retracted position with the eciprocating actuating-arm about to engage nd force forward the reciprocating slide. In view a portion of the magnetic field and rts connected therewith are shown in ver- cal section, the remainder of the field and the armature being shown in dotted lines. The slide and slide-support in this view are shown partly in elevation and partly in vertical section, the vertical section being taken on the dotted line *g h* of Fig. 1. Fig. 8 is a view similar to that shown in Fig. 7, the armature and portions of the magnetic field being omitted and the slide and parts connected therewith being shown in the positions occupied by them when the timing mechanism has very nearly disengaged the actuating-arm from the slide, the said actuating-arm having moved the slide forward. Fig. 9 represents a view similar to that shown in Fig. 8, the magnetic field and parts connected therewith being omitted and the slide and parts connected therewith being shown in the positions occupied by them after the timing mechanism has released the slide from engagement with the reciprocating actuating-arm. In this figure the furthest retracted positions of the slide and parts connected therewith are shown in dotted lines. The positions occupied by the movable electrode and the crank-arm connected thereto when the electrodes have been separated are also shown in dotted lines.

Similar characters of reference indicate similar parts.

1 indicates the engine-cylinder having a side opening 2. An igniter-block 3 is fitted to the outer side of the cylinder and is provided with an inner extension 4, fitted in the opening 2. In a horizontal opening through the block 3 extends a stationary electrode 5, insulated by a sleeve 6 of insulating material from the block 3. The ends of the sleeve 6 are provided with peripheral flanges. Against the flange at the inner end rests the rear side of a flange 7, provided on the inner end of the electrode 5, which is located in the opening 2 of the cylinder. Outside the block 3 on the electrode 5 is mounted a washer 8, which rests against the outer flange upon the sleeve 6. The outer end of the electrode 5 is screw-threaded and has mounted thereon two nuts 9 and 10, the inner one, 10, resting against the washer 8. Between the nuts 9 and 10 is clamped a wire 11, which is also secured to a commutator-brush 12, one end of which is secured to a horizontal non-magnetic plate or board 13. The other end of the commutator-brush bears upon a sleeve 14, rotatable with but insulated from the armature-shaft 15, on which is mounted the armature 16. The magneto machine may be of the ordinary Siemens magneto-electric type having horseshoe-shaped permanent magnets 17, to which

are attached soft-iron pole-pieces 18. At the ends of the pole-pieces 18 are secured the two vertical shaft-bearing plates 19, in which the horizontal shaft 15 is rotatably mounted. The armature may be wound in the manner common to this type. One end of the winding (indicated by 20) is connected to the insulated sleeve 14 and the other end connected to the armature-shaft, the circuit being completed to the block 3 through the bearings 19, one of the pole-pieces 18, screw 21, mounted in a screw-threaded hole in the pole-piece, thence by a wire 22, one end of which is secured to said screw 21, the other end being secured to the screw 23, mounted in a screw-threaded hole in the upper side of the block 3. Parallel with and above the electrode 5 is mounted in a horizontal hole extending through the block 3 the rock-shaft 24, in the inner end of which is secured radially an electrode 25, adapted to bear upon the inner end of the electrode 5. Upon the outer end of the rock-shaft 24 and rotatable therewith is a crank-arm 26, upon the outer end of which in a screw-threaded opening provided therefor is mounted an adjusting-screw 27, which extends transversely through the crank-arm and has mounted thereon a lock-nut 28, adapted to bear against the said crank-arm. To the crank-arm 26 is secured one end of a coil-spring 29, the other end of which is secured to a pin 30, extending horizontally rearwardly from the block 3.

The rock-shaft 15, together with the armature 16, is oscillated to and fro by the following mechanism. A horizontal bracket 31 to the right of the igniter-block 3, as viewed in Fig. 1, is secured at its inner end to the outside of the cylinder 1 and has mounted upon its upper side a slide guide or support 32, the upper side of which is provided with a groove disposed at right angles to the armature-shaft 15. In said groove is reciprocatively mounted a slide 33, provided on its upper side with a projection 34, adapted to be engaged by the free end of a reciprocating arm 35, the opposite end of which is connected with mechanism controlled by the running of the engine and designed to reciprocate the said arm 35.

In Figs. 7, 8, and 9 I have shown a mechanism adapted for this purpose, in which 36 indicates the rotatable crank-shaft of the engine. Upon said crank-shaft is mounted and rotatable therewith a crank-arm 37, having a crank-pin 38, pivotally fitted in a transverse hole provided in the arm 35. As the crank-shaft 36 is rotated the arm 35 will be reciprocated by means of the crank-arm 37 and pin 38. To the left end of the slide 33, as viewed in Figs. 1, 7, 8, and 9, is secured in a screw-threaded opening provided in said slide the screw-threaded end of a rod 39, the other end of which is pivotally connected to a crank-arm 40, rigidly secured upon the inner end of the armature-shaft 15. A hammer-arm 41 is also secured upon the said armature-shaft. The outer end of the said hammer-arm 41 is so disposed that when the armature-shaft is retracted in the proper direction it will come in contact with the adjusting-screw 27 in the crank-arm 26 and move the said crank-arm 26 in a direction such that the electrodes 5 and 25 will be separated from each other, as shown in dotted lines in Figs. 2 and 9. Upon the upper side of the slide-support 32 is secured the timing device, by which the arm 35 is disengaged from the projection 34 of the slide 33. Various means may be employed for causing such disengagement.

In the form illustrated in the drawings I have provided a plate 42, disposed parallel with and at one side of the slide 33. The right end of the said plate 42, as viewed in Figs. 1, 7, 8, and 9, is inclined upwardly to the left, said inclined portion being at its upper end in a higher plane than the upper surface of the projection 34. The free end of the reciprocating arm 35 is so disposed as to come in contact with the inclined portion of the plate 42 and by the said plate made to rise and clear the projection 34 at the proper time when disengagement of the arm 35 from the projection 34 is desired. In order that such disengagement may be made to occur at any desired time, I have designed means by which the plate 42 may be adjusted lengthwise. For this purpose the plate 42 is provided with a vertical longitudinal slot 43, in which is mounted a vertical guide-screw 44, the lower end of which is fitted to a vertical screw-threaded hole provided in the slide-support 32. The left end of the plate 42, as viewed in Figs. 1 and 5, is provided with a longitudinal screw-threaded hole, in which is fitted the right screw-threaded end of an adjusting-screw 45, which is rotatively mounted in a transverse hole provided in a vertical projection 46 on the upper side of the slide-support 32. The said adjusting-screw 45 is provided at the right of the projection 46 with a peripheral flange 47 for preventing lengthwise movement of the said screw in one direction. Movement in the opposite direction is prevented by means of a collar 48, rigidly secured upon the said adjusting-screw and bearing upon the left side of the projection 46. By turning the said adjusting-screw 45 in the proper direction the plate 42 may be adjusted longitudinally to the proper position, after which the guide-screw 44 is turned so as to cause the head thereof to bear tightly upon the upper side of the plate 42, thus insuring the permanent disposition of the plate 42 in the place desired.

Secured to the left end of the slide-support 32, as viewed in Figs. 1, 7, 8, and 9, is a slightly-inclined plate 49, the left end of which is bent upwardly at right angles at

this pa-

provided in such bent portion with a transverse hole through which the rod 39 may be reciprocated. Encircling the rod 39 is a coil-spring 50, one end of which is secured to the bent portion of the plate 49, the other end being secured to a longitudinally-adjustable split sleeve 51, mounted on the rod 39 and adapted to be rigidly secured thereto after it has been properly adjusted by means of a transverse screw 52, rotatively mounted in oppositely-disposed holes in the split portion of the said sleeve 51. In one of said holes the said screw 52 has no screw-thread engagement; but the other of said holes is screw-threaded and fitted to the said screw. By turning the said screw 52 in the proper direction the sleeve 51 may be loosened upon the rod 39, adjusted longitudinally thereon to the proper position, and then rigidly secured in position by tightening the screw 52.

The tension of the spring 50 is such that after the spring has been compressed, as shown in Fig. 8, and then permitted to become extended, as shown in Fig. 9, through disengagement of the arm 35 from the projection 34 the said spring 50 will force the slide 33 and rod 39 to the right, thus oscillating the armature-shaft 15 in a direction such that the hammer-arm 41 will come in contact forcibly with the end of the adjusting-screw 27. The inertia of the slide 33, together with the force of the spring 50, will force the parts into the position shown in dotted lines in Fig. 9—that is, the hammer-arm 41 will force the crank-arm 26 to move in a direction such that the electrodes 5 and 25 will become separated. After the inertia of the slide 33 has been overcome the spring 29 and the spring 50 will cause a retraction of the parts into the position shown in solid lines in Fig. 9, in which position the electrodes 5 and 25 will again come in contact, thus completing the electric circuit.

In operating my invention, the parts having been assembled as described and the parts adjusted so that the electrodes 5 and 25 will be separated at approximately the proper time, the engine is started. As the engine crank-shaft 36 is rotated the slide 33 will be moved to the left, as viewed in Figs. 1, 7, 8, and 9, by the mechanism already described to the position shown in Fig. 8. In this position the armature-shaft will be oscillated in a direction such that the hammer-arm 41 will be as shown in Fig. 8. In the meantime the free end of the arm 35 will have been raised by the inclined portion of the plate 42, so as to nearly clear the projection 34. Continued movement forward of the arm 35 will cause it to be cleared from the projection 34, and the slide 33 will then be retracted by the spring 50 to the positions shown in Fig. 9, thus causing the hammer-arm 41 to strike the screw 27 and force the electrodes 5 and 25 apart, as already described. While the armature-shaft 15, slide 33, and parts connected therewith are being retracted from the positions shown in Fig. 8 to those shown in Fig. 9, the armature 16, carried by the shaft 15, will be oscillated so as to pass from one pole-piece 18 toward the opposite pole-piece. This movement of the armature will cause a current to be generated in the armature-winding 20, the said current passing in one direction or the other in the circuit in which the armature-winding is located, the direction depending upon the polarity of the pole-pieces and the manner of winding the wire on the armature. If the current passes first from the winding 20 to the commutator 14, it will pass from thence to the wire 11 by means of the brush 12, thence through the electrodes 5 and 25 to the igniter-block 3, thence by the screw 23, wire 22, screw 21, pole-piece 18 to bearings 19, thence by armature-shaft 15 to the end of the armature-winding which is secured to the said shaft. The crank-arms 26 and 41 are so adjusted upon their respective shafts that the screw 27 will be struck by the crank hammer-arm 41 at a time when the current generated in the circuit will be near its maximum strength. The hammer-arm 41 striking the anvil mechanism, consisting of the screw 27 and the crank-arm 26, will cause the electrode rock-shaft 24 to oscillate, so as to separate the electrodes 5 and 25 at the time when the strength of the electric current in the circuit is at its maximum strength. The timing mechanism, of which the plate 42 forms a part, will be so adjusted that when the spark occurs, due to the separation of the electrodes 5 and 25, the charge in the cylinder 1 will be very near its maximum compression. The time of separating the electrodes may be further regulated by adjusting the sleeve 51 longitudinally on the rod 39. The more compression given the spring 50 by moving the sleeve 51 in the proper direction the quicker the electrodes will be separated, as the spring 29 will be sooner overcome and permit a movement of the crank-arm 26. By adjusting the screw 27 the time for separating the electrodes may also be varied. After the engine has begun to run at its regular speed the adjustment of the time for producing the spark between the electrodes 5 and 25 may be obtained with great exactness, so that the charge may be fired at the exact time required for the greatest efficiency. To make this adjustment while the engine is running, the clamping-screw 44 is slightly loosened and the screw 45 turned in a direction such that the plate 42 will be moved to the right or left, as it may be desired, in order to disengage the arm 35 from the projection 34 sooner or later. It will be understood that if the engine is to be run at a rapid speed it is necessary to fire the charge sooner than when the engine is running at a slower speed. So when it is desired to increase the speed of

the engine to secure the greatest efficiency from the expansive force of the charge in the cylinder it becomes necessary to fire the charge earlier. This may be done, as described, while the engine is running by turning the screw 45 in the proper direction to advance the plate 42 toward the arm 35, after which the screw 44 is tightened to preserve the adjustment obtained.

Any one versed in the art will understand the great advantage of being able to adjust the time of firing the charge while the engine is running at its regular working speed, as at this time the operator can exactly determine the proper time for producing the firing-spark.

In order that the crank-arm 26 and the hammer-arm 41 may hold their relative positions with respect to each other intact, I prefer to mount the plate or board 13 upon a horizontal bracket 53, the inner end of which is provided with a vertical flange 54, secured rigidly to the igniter-block 3. The igniter-block 3, which is such as are commonly used in engines of this type, may be sent, together with the magneto-electric machine and some of the parts connected therewith, and fitted to an engine in lieu of a similar igniter-block provided with another sparking mechanism. The bracket 31, together with the parts mounted thereon, may also be sent from the factory ready to mount on an engine already set up. In such cases it is but necessary to connect the rod 39 to the crank-arm 40 after the brackets 53 and 31 are secured in place.

The rod 39 being quite long and slender, lack of sufficient space on the sheet preventing its full length being shown, the end connected with the crank-arm 40 can yield the amount required to follow the arc described by the said crank-arm in oscillating to and fro.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, of means for normally holding the electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, means for moving the slide in the opposite direction, means for oscillating the armature by means of the slide, means for separating the electrodes when the slide is moved in said opposite direction, and means for timing the movement of the said slide in said opposite direction.

2. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, of means for normally holding the said electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, a spring for retracting the slide, means for oscillating the armature by means of the slide, adjustable timing means for determining the time of retracting the slide, and means for separating the electrodes when the slide is retracted.

3. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, one of which is movable, of means for normally holding the said electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, a spring for retracting the slide, means for oscillating the armature by means of the slide, timing means adjustable independently of the running of the engine for determining the time of retracting the slide, and adjustable means for separating the electrodes when the slide is retracted.

4. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes one of which is movable relative to the other, of means for normally holding the electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means by which the armature is oscillated by means of the slide, means controlled by the running of the engine for moving the slide in one direction, means for retracting the slide in the opposite direction and two arms, one oscillatory with the armature and the other mounted on the movable electrode the said two arms being so disposed that the arm carried by the armature will strike the electrode-arm and cause a separation of the electrodes when the slide is retracted.

5. In igniters for explosive-engines, the combination with an oscillatory armature-shaft, of a hammer-arm oscillatory therewith, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, spring-actuated mechanism for retracting the slide, timing means controlling the retraction of the slide, means for oscillating the armature-shaft by means of the slide, two electrodes, one fixed and the other movable, the movable electrode being provided with an arm, an adjusting-screw rotatably mounted in said arm and adapted to be struck by the hammer-arm when the armature-shaft is retracted, and means for normally holding the two electrodes in contact with each other.

6. In igniters for explosive-engines, the

combination with an electric circuit having included therein two electrodes, of means for holding the electrodes normally in contact with each other, an oscillatory armature, a reciprocating slide, means for oscillating the armature by means of the slide, a reciprocating actuating device reciprocated by the running of the engine and provided with means for engaging and moving the slide in one direction, a tripping device for releasing the slide from the actuating device, means for retracting the slide, and means for separating the electrodes when the slide is retracted.

7. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, of means for holding the electrodes normally in contact with each other, an oscillatory armature included in the said circuit, a reciprocating slide, means for oscillating the armature by means of the slide, a reciprocating actuating device reciprocated by the running of the engine and provided with means for engaging and moving the slide in one direction, an adjustable tripping device for releasing the slide from the actuating device, means for retracting the slide when the same is released from the actuating device, and means for separating the electrodes when the slide is retracted.

8. In igniters for explosive-engines, the combination with an electric circuit of two electrodes one of which is movable toward and from the other, means for normally holding the electrodes in contact with each other, an oscillatory armature provided with a winding included in the said circuit, an oscillatory shaft on which the armature is mounted, a crank carried by said shaft, a reciprocating slide, a rod connecting said slide and said crank, a magnetic field in which the armature is located, means controlled by the running of the engine for moving the slide in one direction, means for retracting the slide in the opposite direction, adjustable timing means for determining the time of retraction of the slide, and means for separating the electrodes when the slide is retracted.

In testimony whereof I have signed my name to this specification in presence of the two subscribing witnesses.

GEORGE J. WEBER.

Witnesses:
WARREN D. HOUSE,
JESSIE R. COMSTOCK.

L. H. WATTLES.

SPARKING IGNITER.

APPLICATION FILED MAY 29, 1908.

909,264.

Patented Jan. 12, 1909.

3 SHEETS—SHEET 1.

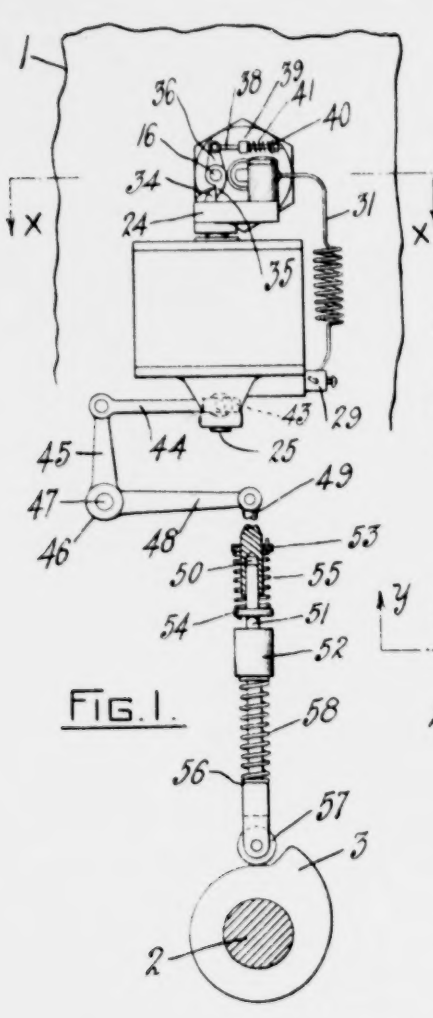


FIG. 1.

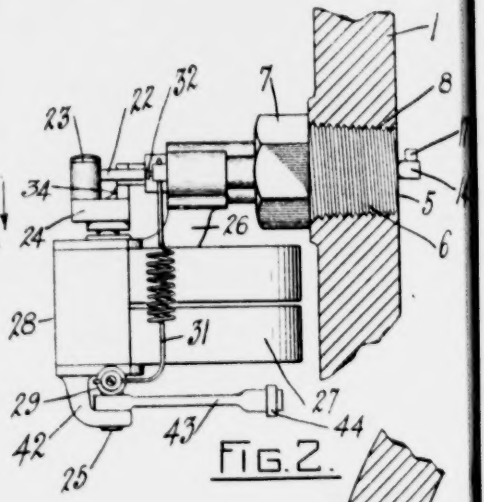


FIG. 2.

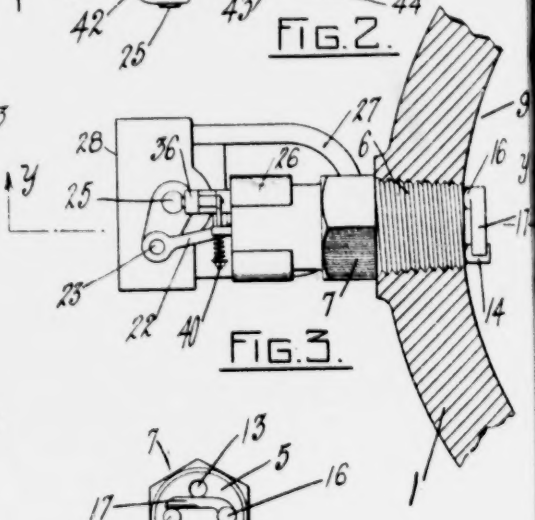


FIG. 3.

FIG. 4.

WITNESSES

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SPARKING IGNITER.

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3 SHEETS—SHEET 2.

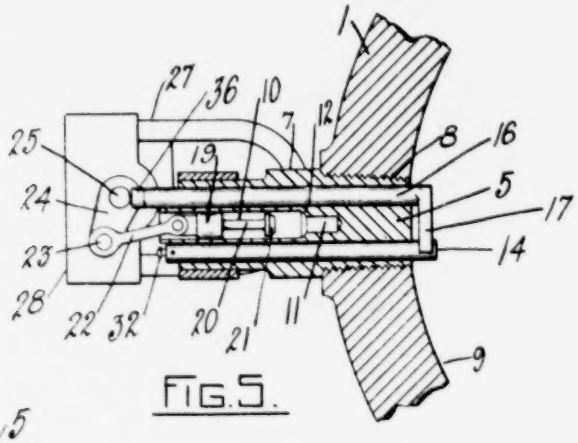


FIG. 5.

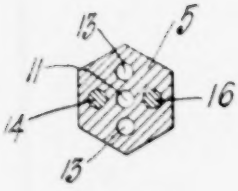


FIG. 7.

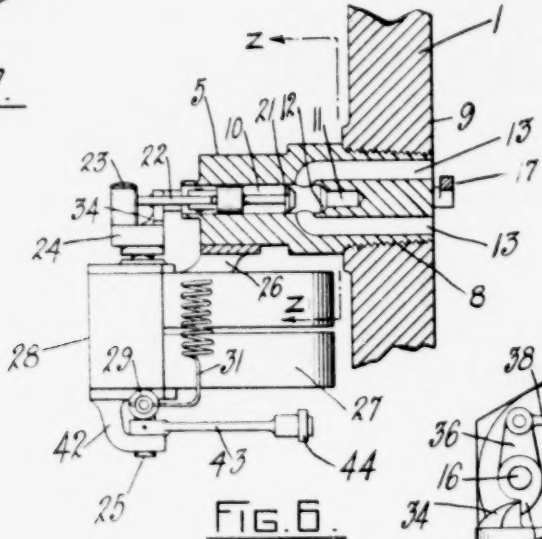


FIG. 6.

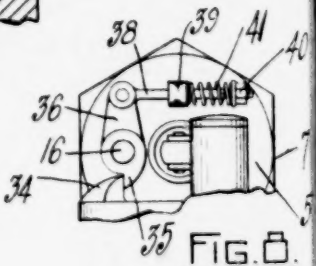


FIG. 8.

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SPARKING IGNITER.

APPLICATION FILED MAY 29, 1908.

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3 SHEETS—SHEET 3.

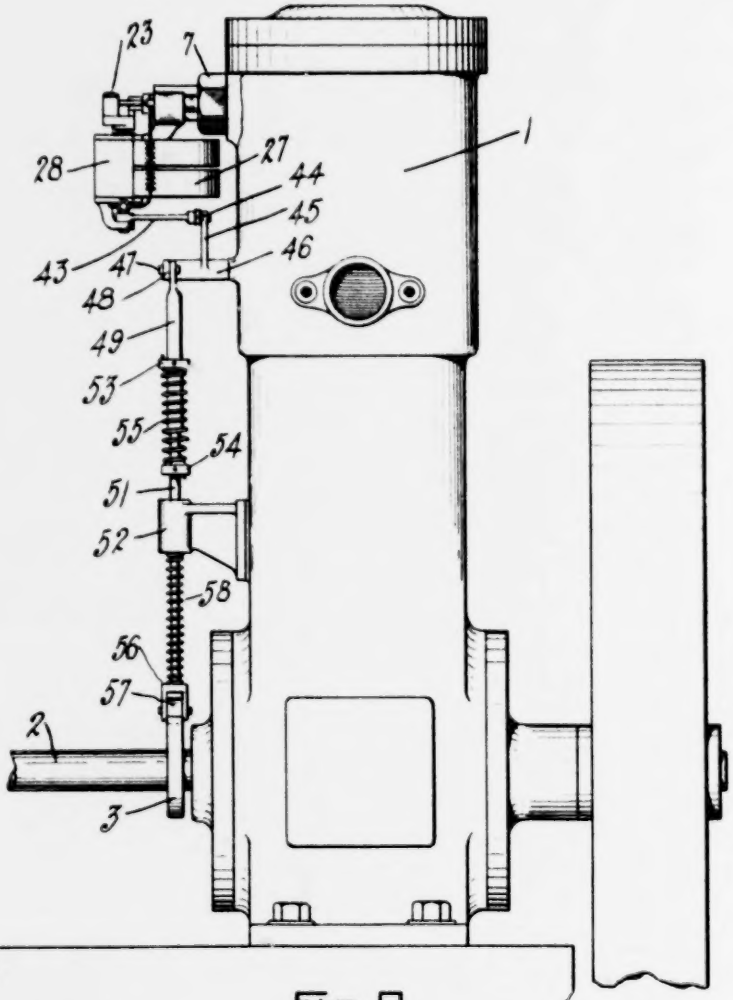


FIG. 9.

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By Horatio E. Bellows

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UNITED STATES PATENT OFFICE.

LUTHER H. WATTLES, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF TO MATIE C. MESSLER, OF PAWTUCKET, RHODE ISLAND.

SPARKING IGNITER.

No. 909,264. Specification of Letters Patent. Patented Jan. 12, 1909.

Application filed May 29, 1908. Serial No. 435,704.

To all whom it may concern:

Be it known that I, LUTHER H. WATTLES, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Sparking Igniters, of which the following is a specification.

My invention relates to sparking ignition devices for internal combustion engines and has in addition to the ends commonly sought in this class of structures, the following objects: the production of a forcible, certain, and long break or spark despite any accumulations upon the electrode surfaces: the facilitation of sparking by the destruction of the dead fuel stratum around the electrodes: the utilization of the compressed charge to actuate the magneto, and to assure the generation of a current of high electromotive force for the igniter circuit: the provision of a construction which permits the starting of the engine by a partial revolution of the crank shaft and without complete compression of the charge.

To the above enumerated and other ends, my invention consists of means for operating the magneto with the charge compressed in the engine cylinder, and of the driving mechanism employed to thus operate same; of means for insuring a circulation around the electrodes in the explosion chamber and within the area of the dead fuel stratum; and of means positive and independent of the magneto driving means for starting the magneto armature.

These features of invention as well as other features which will be set forth in the claims, will be understood from a detailed description of the device in which they are embodied, and which illustrates all the various features of the invention in the forms in which I prefer to use them.

This device is shown in the accompanying drawings which constitute a part of this specification, and in which—

Figures 1, 2 and 3 are front, side, and top plan elevations respectively of my novel apparatus mounted in the side of engine cylinder. Fig. 4, a bottom plan view of the plug. Fig. 5, a section on line *x x* of Fig. 1. Fig. 6, a section on *y y* of Fig. 3. Fig. 7, a transverse section of the plug on line *z z* of Fig. 6. Fig. 8, an enlarged end view of the plug, and Fig. 9, a side elevation of an engine provided with my device.

Like characters of reference indicate like parts throughout the views.

My device is adapted for use upon both two cycle and four cycle engines and is herein illustrated as applied to a two cycle engine of standard construction, the details of which are therefore omitted.

1 represents the side cylinder casting, 2 the crank shaft, and 3 the cam, of a two cycle engine, in connection with which the elements of the invention are described.

The embodiment of my invention in this instance comprises a plug, 5, provided with an exteriorly threaded end portion, 6, and hexagonal intermediate portion, 7. This plug is fixed in a threaded opening, 8, in the casting, 1, near the top of the cylinder, with its end face exposed in the compression area of combustion chamber, 9. The outer end of the plug is centrally bored to form a longitudinal chamber, 10, extending partially through the plug. The inner end of the chamber is of lessened diameter forming an auxiliary chamber or pocket, 11, and a beveled shoulder or valve seat, 12. Two passages, 13, 13, in the plug extend from opposite sides of the chamber, 10, to the combustion chamber.

Fixed within and insulated from the igniter plug, 5, is the electrode, 14, and axially movable in the plug is the grounded electrode, 16, provided with the contact arm, 17, within the combustion chamber.

Mounted in the chamber, 10, is a piston, 19, provided upon its face with the stem, 20, of a valve, 21. A connecting rod, 22, connects the piston with a crank pin, 23, upon a crank arm or disk, 24, fixed to the armature, 25, of an electric generator supported by a bracket or arm, 26, mounted upon the plug, 5.

The generator or magneto may be of any usual or preferred construction. The form thereof herein shown comprises horseshoe magnets, 27, base 28, and binding post 29, whence through the wire 31, leading to the binding post, 32, the current generated by the dynamo passes to the stationary electrode, 14.

Upon the margin of the upper face of the

crank arm or disk 24 is a lug or projection, 34, contacting with the free end, 35, of a lever, 36, stationary intermediate its length to the outer end of the electrode, 16. Pivoted to the end of the lever, 36, is a rod, 38, slidably mounted in a post, 39, upon the end of the plug. Upon the end of the rod, 38, is an adjusting nut, 40, against which abuts a spring, 41, whose opposite end presses against the post, 39.

Fixed to the base, 28, of the magneto is a step or bearing arm, 42, for the lower end of the armature, 25. To the armature is fixed an arm, 43, whose free end is connected by a link, 44, to the upper arm, 45, of a bell crank lever, 46, mounted upon a stud, 47, in the engine casing, and to whose lower arm, 48, is pivoted the upper section, 49, of a telescoping cam rod. This section has a longitudinal bore, 50, to receive as a sliding fit the upper end of a second section, 51, mounted in a bearing, 52, upon the engine casing. Fixed upon the sections, 49 and 51, near their telescoping ends, are collars, 53 and 54, respectively, against which press a spiral spring, 55. The rod section, 51, has below the bearing, 52, a shoulder, 56, and carries upon its end the usual cam roll, 57, which rests against cam 3. The spring, 58, upon the cam rod section, 51, presses against the bearing, 52, and shoulders, 56, to keep the roll, 57, in contact with the cam. It will be understood that the described mechanism for communicating motion from the cam, 3, to the armature, 25, is not exclusive.

The operation of the apparatus is as follows: When the engine crank has passed its center the cam, 3, starts the armature, 25, through the cam rod connections, and through the crank disk, 24, and connecting rod, 22, elevates the piston, 19, and the valve, 21, slightly from the seat, 12, of the latter. At this instant, the compression of the engine charge in the combustion chamber has reached its highest point, and traversing the passages, 13, strikes the inner faces of valve, 21, and piston, 19, with great force, imparting through crank disk, 24, a movement at a high rate of speed to the armature, 25. The described impulse is purposed to rotate the crank disk approximately thirty degrees. The limit of this movement may be regulated by the spring, 41, which is adjustable by nut, 40. The advance of the crank disk through projections, 34 and 35, imparts to the movable electrode, 16, a rotary movement whereby the contact arm, 17, is swung away from the electrode, 14, with great force and in a long arc thereby producing a long spark. After the explosion, the contact arm, 17, is swung back into close contact with the electrode, 14, by the action of spring, 41, upon the rod, 38, and lever 36. The armature, piston, and valve are forced back into original position by the cam, 3, rod 51, 49, lever 46, link 44, and arm 43. The reservoir or pocket, 11, facilitates the action of the valve.

It will be observed that the diameter of the valve, 21, is less than that of the piston, 19, and that the inlet passages, 13, when the valve is seated, open intermediate the piston and valve. Therefore, the balancing is so perfect that after the latter is slightly raised from its seat, but little pressure through the inlets is required to propel the piston, 19, and little mechanical force is required to initially unseat the valve. This initial unseating may be effected at any time by manually depressing the cam rod section, 49, against the tension of spring, 55, which normally holds the valve, 21, in its seat. The possibility of thus manually raising the valve from its seat by the exertion of very little force makes it possible to produce the spark and start the engine without completely rotating the crank shaft or completely compressing the charge. That is to say, the fly wheel is rotated rearwardly a fraction of a rotation which produces a partial compression, and the valve is next manually unseated as described.

The passage of the charge from the combustion chamber through the passage, 13, insures a circulation around the sparking points and prevents the development of a dead fuel stratum around the electrodes. The certainty and strength of the spark is increased because of the great speed imparted to the magneto armature by the compressed charge.

For the purposes of this invention, it is immaterial whether the engine with which my igniter is used is of the explosive or internal combustion type; whether the fuel is injected into the charge before the engine crank has passed its upper center or after; or whether compressed charge consists of fuel or air, or fuel and air mixed.

Having described my invention, what I claim is:

1. In an electric sparking ignition mechanism, the combination with an engine cylinder, and electrodes in the cylinder, or means electrically connected with the electrodes and actuated by the unignited compressed charge in the cylinder for generating a current in the electrodes.

2. In an electric sparking ignition mechanism, the combination with an engine cylinder, electrodes, and an electric generator therefor, of means actuated directly by the compression of the engine charge for operating the generator.

3. In an electric sparking ignition mechanism, the combination with an engine cylinder, an igniter circuit, and an electric generator having an armature in the circuit of means operated directly by the compres-

sion of the charge in the cylinder for imparting the generating throw to the armature of the generator.

4. In an electric sparking ignition mechanism, the combination with an engine cylinder, an ignition circuit, and an electric generator having an armature shaft in the circuit, of means actuated directly by the compression of the charge in the cylinder for imparting the generating throw to the armature shaft of the generator.

5. In an electric sparking ignition mechanism, the combination with an engine cylinder, an ignition circuit, and an electric generator having an armature shaft in the circuit, of means actuated directly by the compression of the charge in the cylinder for imparting the generating throw to the armature shaft of the generator, and spring means for returning the armature shaft to original position.

6. In an electric sparking ignition mechanism, the combination with an engine cylinder, electrodes in the cylinder, and an electric generator having an armature shaft, of a piston operatively connected with the generator armature shaft, and adapted to be actuated directly by the compression of the charge in the cylinder.

7. In an electric sparking ignition mechanism, the combination with an engine cylinder, an ignition circuit, and an electric generator having an armature shaft, of a piston operatively connected with the generator armature shaft and actuated directly by the compression of the charge in the engine cylinder.

8. In an electric sparking ignition mechanism, the combination with an engine cylinder, and movable and stationary electrodes in the cylinder, of an electric generator in the ignition circuit actuated directly by the compression of the charge in the cylinder, and means actuated by the generator for operating the movable electrode.

9. In an electric sparking ignition mechanism, the combination with an engine cylinder, an engine cam rod, an electric generator having an armature shaft, and an ignition circuit, of means operated directly by the charge in the cylinder for imparting a generating throw to the armature shaft, and means actuated by the cam rod for initially moving the armature shaft.

10. In an electric sparking ignition mechanism, the combination with an engine cylinder and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber, and with passages extending from the chamber into the cylinder, a piston in the chamber, and driving connections between the piston and armature shaft.

11. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber and valve seat, and with passages extending from the chamber into the cylinder, a piston in the chamber, a valve fixed to the piston and adapted to register in the valve seat, and driving connections between the piston and armature shaft.

12. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber and a valve seat, and with passages extending from the chamber into the cylinder, a piston in the chamber, a valve of less diameter than the piston fixed to the piston, and adapted to register in the valve seat, and driving connections between the piston and armature shaft.

13. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber, a pocket at the end of the chamber, a valve seat at the open end of the pocket, and with passages extending from the chamber into the cylinder, a piston in the chamber, a valve upon the piston adapted to register in the valve seat, and driving connections between the piston and armature shaft.

14. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, a crank upon the armature shaft, and a rod connecting the piston with the crank.

15. In an electric sparking ignition mechanism, the combination with an engine cylinder, a cam rod and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, a crank upon the armature shaft, a rod connecting the piston with the crank, an arm upon the armature shaft, and pivoted connections between the arm and cam rod.

16. In an electric sparking ignition mechanism, the combination with an engine cylinder, a cam rod and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, a crank upon the armature shaft, a rod connecting the piston and crank, an arm upon the armature shaft, operative connections between the arm and cam rod, and yielding means upon the cam rod for normally tensioning the armature shaft.

17. In an electric sparking ignition mechanism, the combination with an engine cyl-

inder and electrodes in the cylinder, of means electrically connected with the electrodes and actuated directly by the compressed charge in the cylinder for generating a current in the electrodes.

18. In an electric sparking ignition mechanism, the combination with an engine cylinder, electrodes, and an electric generator therefor, of means actuated by the unignited engine charge for operating the generator.

In testimony whereof I have affixed my signature in presence of two witnesses.

LUTHER H. WATTLES.

Witnesses:
HORATIO E. BELLOWS,
WALTER LOUIS FROST.

Correction in Letters Patent No. 909,264.

It is hereby certified that in Letters Patent No. 909,264, granted January 12, 1909, upon the application of Luther H. Wattles, of Providence, Rhode Island, for an improvement in "Sparking Igniters," an error appears in the printed specification requiring correction, as follows: In line 113, page 2, the word "or" should read *of;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of June, A. D., 1909.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.

R. HENNIG.

IGNITION GEAR FOR INTERNAL COMBUSTION ENGINES.

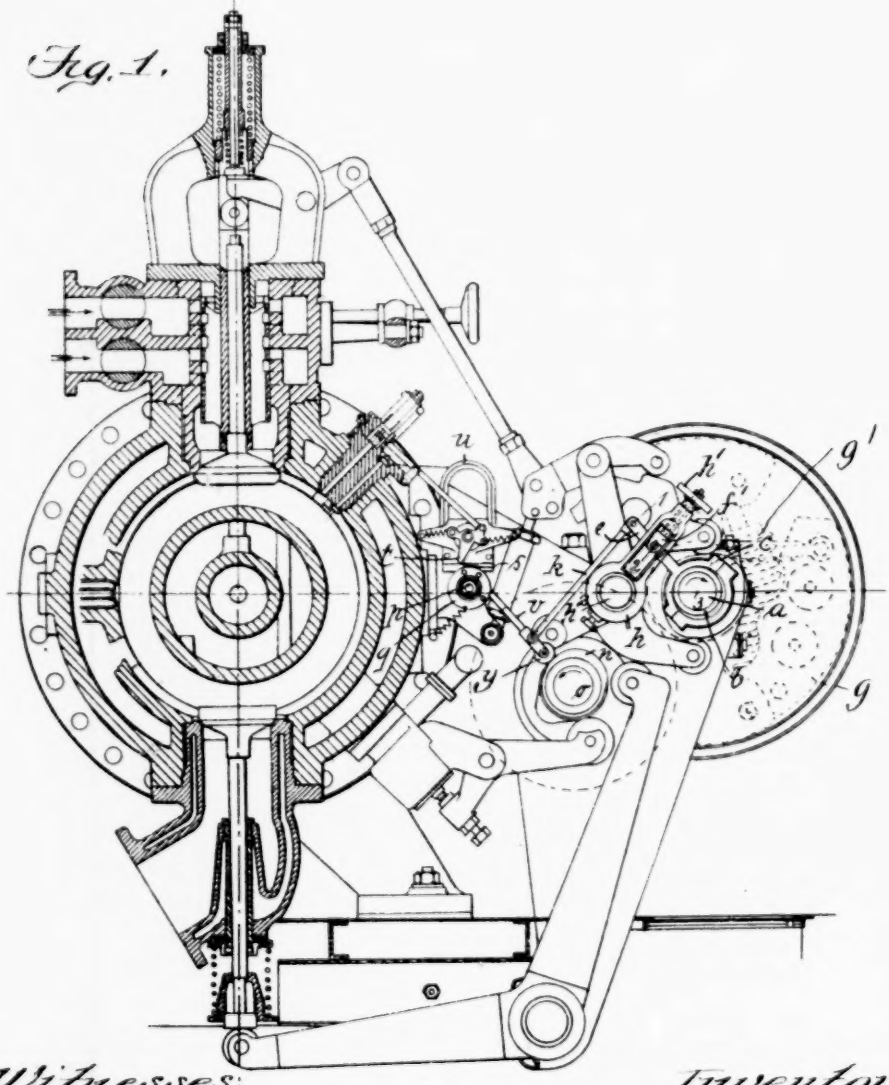
APPLICATION FILED MAR. 3, 1904.

916,312.

Patented Mar. 23, 1909.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses

James L. Norris, Jr.

C. J. Kester

Inventor

Rudolf Hennig

By James L. Norris

Atty

R. HENNIG.

IGNITION GEAR FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED MAR. 3, 1904.

916,312.

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5 SHEETS—SHEET 2.

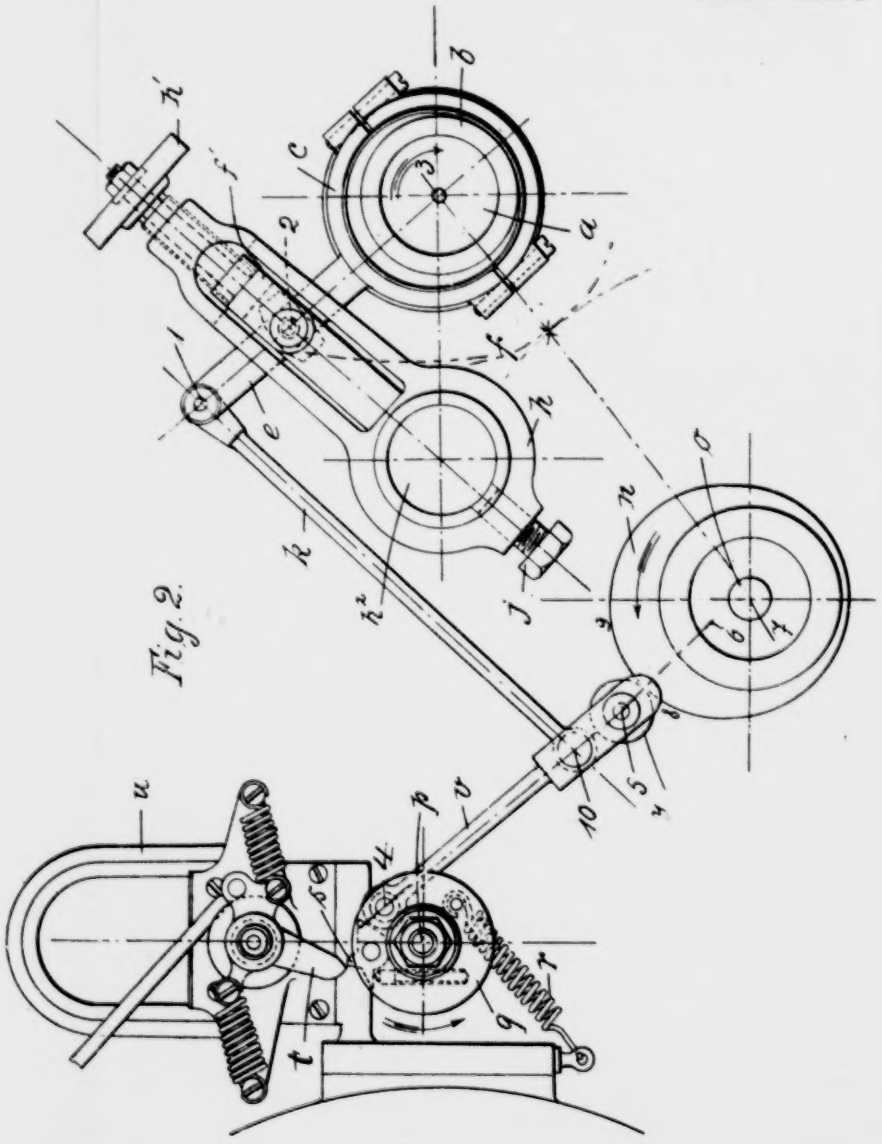


Fig. 2.

Witnesses:

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IGNITION GEAR FOR INTERNAL COMBUSTION ENGINES.

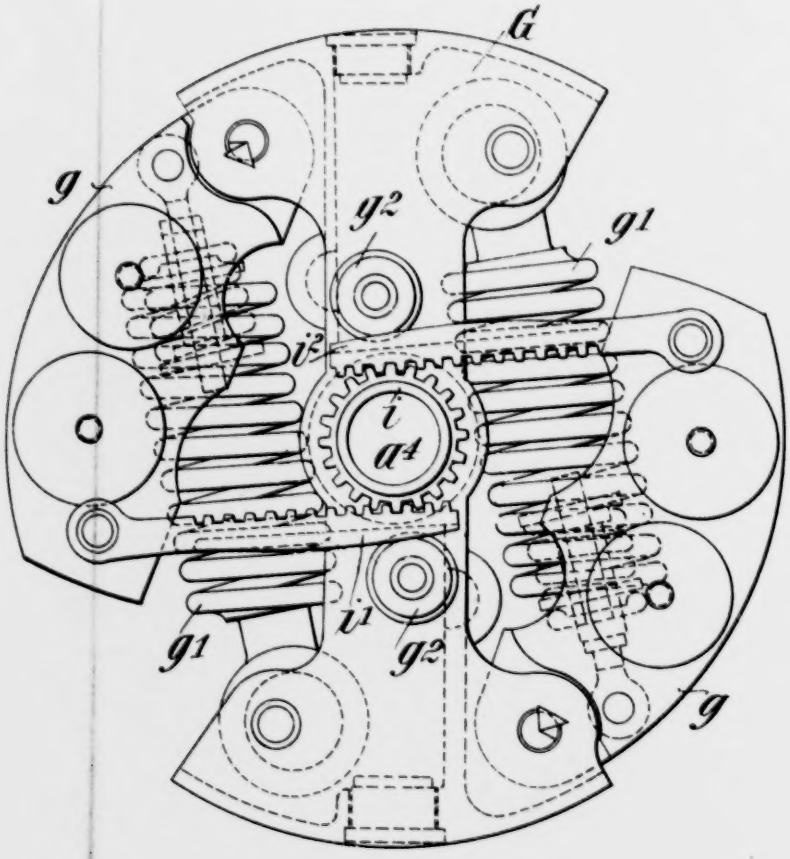
APPLICATION FILED MAR. 3, 1904.

916,312.

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6 SHEETS—SHEET 3.

Fig. 3.



Witnesses:

James L. Norris, Jr.

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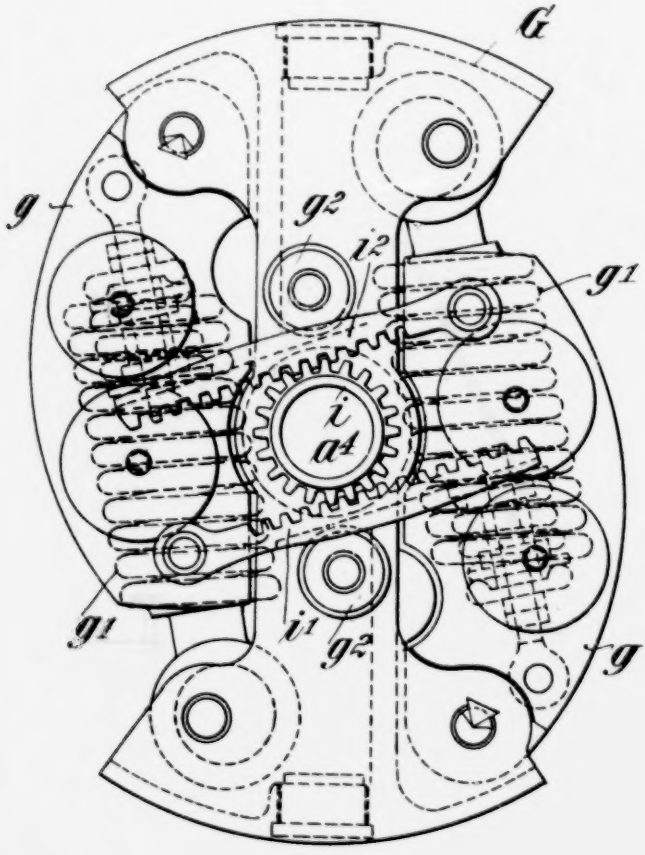
IGNITION GEAR FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED MAR. 3, 1904.

916,312. **Patented Mar. 23, 1909.**

5 SHEETS—SHEET 4.

Fig. 4.



Witnesses:

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796

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IGNITION GEAR FOR INTERNAL COMBUSTION ENGINES.

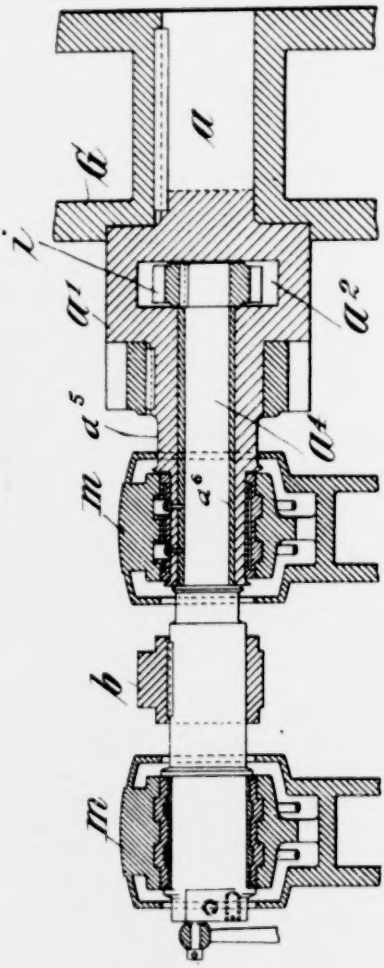
APPLICATION FILED MAR. 3, 1904.

916,312.

Patented Mar. 23, 1909.

5 SHEETS—SHEET 5.

Fig. 5.



Witnesses:

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Rudolf Hennig

By

James L. Norris

RUDOLF HENNIG, OF ZWEIBRÜCKEN, GERMANY

797

IGNITION-GEAR FOR INTERNAL-COMBUSTION ENGINES.

No. 916,312. Specification of Letters Patent. Patented March 23, 1909.

Application filed March 3, 1904. Serial No. 196,392.

To all whom it may concern:

Be it known that I, RUDOLF HENNIG, a subject of the Emperor of Germany, residing at Zweibrücken, Pfalz, Bavaria, Germany, have invented certain new and useful Improvements Relating to Ignition - Gear for Internal-Combustion Engines, of which the following is a specification.

This invention has for its object, in order to obtain the maximum thermal duty from the explosive gases, to vary, by automatic mechanism, the time of ignition of the compressed mixture of air and gas in the cylinder of the internal combustion engine, so that the combustion of the mixture of air and gas takes place as nearly as possible in the neighborhood of the inner dead point. Such variation or control of the time of ignition is necessary, since, when the engine is running with a light load, the mixture of gas and air is mixed with a greater quantity of the exhaust gases and burns more slowly than when the engine is running with a heavy load; such variation is also required when the speed of the engine is altered, since the released elements of the ignition-mechanism require time to effect the interruption of the current.

The variation in the time of ignition is generally effected by hand in a known manner, more especially on starting the engine, where the speed of rotation must increase from zero to the normal. On the other hand, within the range of speeds in which the governor acts, fine adjustment by hand is extremely difficult. It, therefore, follows that this fine adjustment should be effected by the governor and the coarse adjustment by hand.

The fine adjustment by the governor, according to practical experiments, must take place in such a manner that the time of ignition for an equal interval of range of load must be altered less by the governor at full load than at light loads, since with a light load the gaseous mixture in the cylinder highly charged with exhaust-gases requires much more time for combustion than the mixture used at full load. Thus, for a certain range, near full load, the time of ignition is hardly altered at all, but for the same range of load near the point of running idle, the time of ignition is altered very considerably. Moreover it is necessary to be able to adjust by hand, during running, the whole range of variation to be produced by the governor, since this range differs with different kinds of gas.

This invention takes account of these considerations and permits the time of ignition to be altered by hand during running of the engine; the time of ignition to be altered by the governor by a definite amount or degree from the maximum to the minimum load, this degree to be regulated practically by hand and to be fixed during running of the engine; and the adjustment of the point of ignition to be effected more rapidly by the governor at light load than at full load.

In the drawings:—Figure 1 is a sectional view of an explosive engine provided with an ignition gear constructed in accordance with the present invention. Fig. 2 is a detail elevation on an enlarged scale of the present ignition gear. Figs. 3 and 4 are detailed elevations of the governor mechanism in two different positions thereof. Fig. 5 is a fragmentary longitudinal sectional view illustrating the manner of mounting, and certain gear connections of the governor.

The governor shaft is designated *a* and rotates at the same speed as the engine shaft (not shown). The governor G, mounted on the way or side shaft *a* is of wheel form and is provided with the pivotally attached governor weights *g* which are pressed inward by spiral springs *g'*. Rack bars *i'* and *i²* are pivoted at the free ends of the weights *g*, the said bars being guided in their movements by rollers *g²*.

The bars *i'* and *i²* engage relatively opposite sides of a pinion *i* which is disposed in a recess *a²* of an enlargement *a'* of the shaft *a*. The pinion *i* is carried on a shaft *a⁴* which is disposed in a hollow shaft *a⁵* forming in effect an axial continuation of the shaft *a* and projecting integrally from the enlargement *a'* thereof, a bushing *a⁶* being interposed between the shafts *a⁴* and *a⁵*, the ends of which shafts are supported in bearings *m*.

The shaft *a⁴* carries an eccentric *b* which coöperates with an eccentric strap *c* having a projecting radial arm *e*. A link *k* is pivoted to the upper end of the latter and likewise to a rod *v* near the lower end thereof. The said rod *v* at its upper end is pivoted to a disk *q* having a central axis *p*, and at its lower end carries a roller *y* which is always engaged by a cam or tappet *n*. The latter is carried by a shaft *o* which rotates at half of the speed of the governor shaft *a* from which it is driven by suitably proportioned gear wheels shown by dotted lines in Fig. 1.

The disk *q* is held so that the roller *y* of the

rod *v* is always in contact with the cam or tappet *n* and for this purpose a spring *r* is employed. Said disk *q* is provided with a pawl *s* which engages and acts upon the spring controlled actuating or snap lever *t* of the magneto *u*, from which motion is transmitted in a well known manner to the ignition or contact breaker means.

The arm *e*, above referred to, passes through a guide member *f* which is pivotally mounted as at 2 in a bracket or slide piece *f'*, the latter being adjustable longitudinally of a frame *h* by suitable screw mechanism which is operated by a hand wheel *h'*. The frame *h* is formed at its lower end to surround a fixed shaft h^2 which forms a pivotal axis for the frame in its adjustable movement, a set screw *j* threaded through the frame and engaging the shaft h^2, serving as a means to hold said frame at selected positions to which it may be adjusted.

The movement of the rod *v* to effect the ignition of the gases is controlled by the portion of the curved face of the cam *n* which lies between the points 8 and 9, the arc thus indicated having its radius from the point 6. The snapping off operation of the lever *t* from the pawl *s* occurs at some point (hereinafter termed the operating point) along the arc 8, 9, this point being in the line 5, 6, as shown in Fig. 1. It follows that the snapping off operation is timed in accordance with the location of the operating point. The cam *n* turns counterclockwise and therefore if this operating point be located at the right of the line 5, 6, when it contacts with the roller *y*, an earlier snapping off occurs and at the left of said line, a later snapping off occurs.

The position of the operating point is determined by the position of the roller *y* of the rod *v* with relation to the operating face 8, 9 of the cam *n*. The adjustment of the position of the rod *v* on its pivot 4, for the purposes of changing the operating point and consequently the time of snapping off is effected in the two ways above indicated, first, manually by manipulating the hand wheel *h'* so as to move the arm *e* about the center of the eccentric *b* as an axis, whereby the link *k* and rod *v* will be correspondingly moved, and second, by the governor, in which operation the relation of the eccentric *b* toward the shaft *a* is changed, it being understood that the eccentric *b* rotates at the same speed as the shaft *a* and that the changed relation thereof is effected by causing the shifting of said eccentric in advance of the shaft *a* to cause an earlier snapping off, or the retardation of the eccentric with respect to the shaft *a* to cause a later snapping off, this movement of the eccentric with relation to the shaft *a* extending through an angle of approximately 140°. It is to be understood that the point *e* when the snapping off takes place, is situated on the upper portion of the curve described by it and adjacent to the frame *h*.

When the eccentric *b* turns in advance of the shaft *a*, the lower end of the arm *e* is shifted toward the right and the upper end of said arm toward the left with corresponding movements of the link *k* and rod *v*. When the eccentric *b* is retarded, the lower end of the arm *e* is shifted toward the left and the upper end of said arm toward the right, with corresponding movements of the link *k* and rod *v*.

During the rotation of the shaft *a*, the upper end of the arm *e* describes an ellipse, a portion of the curvature of which figures in the operative movement of the rod *v* in any of the positions in which the above described operating points may be varied, through the operation of either of the two means provided for this purpose.

Under different conditions of working, it may be desired to vary the range of adjustment of the governor means and consequently the range of movement of the rod *v* and this is accomplished by changing the location of the pivot 2 so as to increase or decrease the amplitude of movement of the upper end of the arm *e* in the direction of the link *k* and to accordingly vary the dimension of the elliptical curve in the direction of said link, the other dimension of said curve which is in the direction of the arm *e* being constant. In changing the location of the pivot 2, the frame *h* is turned on the shaft h^2 toward or away from the shaft *a* as far as necessary, and the screw *j* is tightened after the adjustment has been made so as to hold said frame against further movement. Movement of the frame *h* away from the shaft *a* reduces the variable dimension of the aforesaid elliptical curve and movement of the frame toward said shaft increases the variable dimension of the curve.

Having fully described my invention, I claim:—

1. An ignition-gear for internal-combustion engines, comprising a magneto-electric generator, a spring controlled actuating or snap lever for said generator, a rotary way- or side-shaft, a governor, an eccentric rotatably mounted on said shaft and controlled by said governor, a rod actuated by said eccentric, a pivotally-mounted guide for said eccentric-rod, a transversely-adjustable frame for said guide, a rotary cam, a rod one end of which presses against said cam, a link connecting said end of said rod to the free end of said eccentric-rod, a disk oscillated by said rod and a pawl on said disk coacting with the actuating or snap-lever of said magneto-electric generator.

2. An ignition-gear for internal-combustion engines, comprising a magneto-electric generator, a spring controlled actuating or snap lever for said generator, a rotary way-

or side-shaft, a governor, an eccentric rotatably mounted on said shaft and controlled by said governor, a rod actuated by said eccentric, a pivotally-mounted guide for said eccentric-rod, a guide-frame arranged transversely to said eccentric-rod, a support for said guide-frame, means for clamping said frame to said support, a slide-piece bearing said eccentric-rod-guide and arranged in said guide-frame, means operated by hand for moving said slide-piece in said guide-frame, a rotary cam, a rod one end of which presses against said cam, a link connecting said end of said rod to the free end of said eccentric-rod, a disk oscillated by said rod, and a pawl on said disk coacting with the actuating or snap-lever of said magneto-electric generator.

3. An apparatus for controlling the time of ignition in explosive engines, comprising an oscillatory rod, means engaging said rod for oscillating it, a governor for controlling the said oscillation, a second rod engaging said oscillating rod, actuating means for said second rod, an ignition gear connected to the said second rod and an adjusting device engaging said oscillating rod at a point intermediate the points of engagement of said oscillating means and said second rod and adapted when adjusted to alter the axis of oscillation of said oscillating rod.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RUDOLF HENNIG.

Witnesses:

GREGOR LOESCH,

OTTO HEYER.

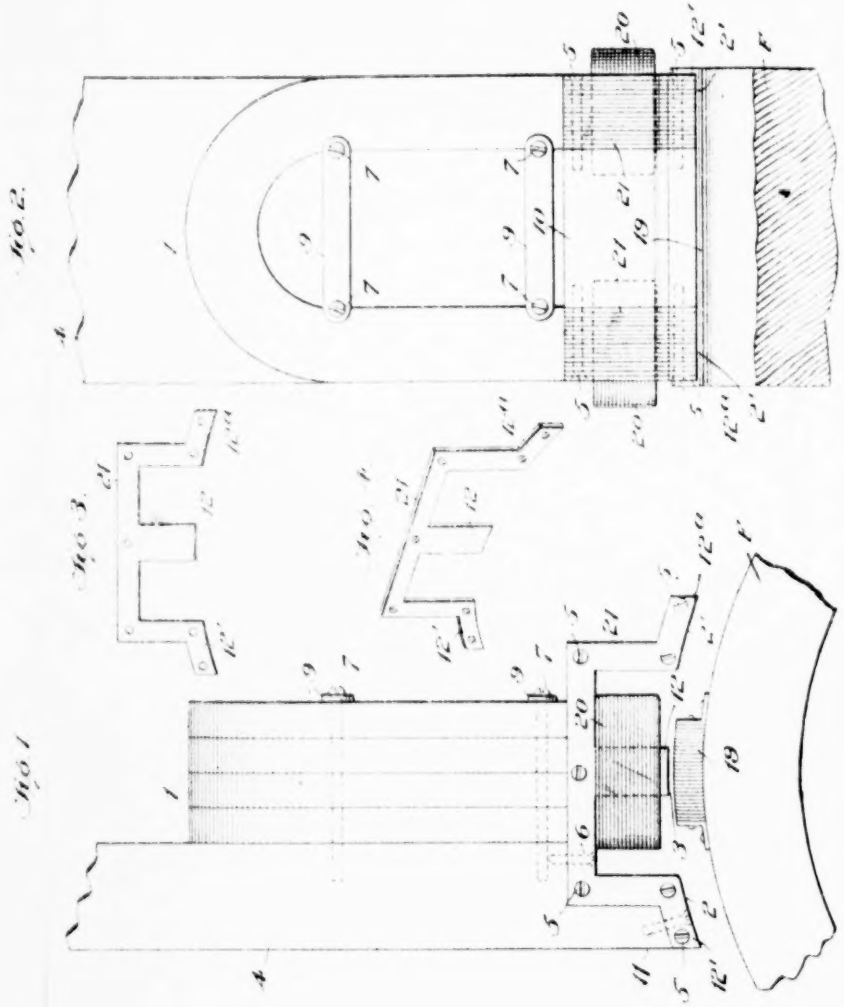
S02

H. J. PODLESAK & T. E. PODLESAK.

INDUCTOR GENERATOR FOR IGNITION PURPOSES.

APPLICATION FILED JAN. 28, 1908. RENEWED FEB. 10, 1909.

947,647. **Patented Jan. 25, 1910.**



Witnesses

Edwin L. Bradford

C. C. Wright

Inventors

Henry Joseph Podlesak

Ted Emil Podlesak

By Henry J. Podlesak.

Attorney

UNITED STATES PATENT OFFICE.

HENRY JOSEPH PODLEŠÁK, OF CHICAGO, ILLINOIS, AND TESLA EMIL PODLESAK, OF MORRISTOWN, NEW JERSEY.

INDUCTOR-GENERATOR FOR IGNITION PURPOSES.

947,647. Specification of Letters Patent. Patented Jan. 25, 1910.

Original application filed September 25, 1901, Serial No. 76,559. Divided and this application filed January 28, 1908, Serial No. 413,070. Renewed February 10, 1909. Serial No. 477,251.

To all whom it may concern:

Be it known that we, HENRY JOSEPH PODLEŠÁK and TESLA EMIL PODLESAK, residing at Chicago, in the county of Cook and State of Illinois, and Morristown, county of Morris, State of New Jersey, respectively, have invented certain new and useful Improvements in Inductor-Generators for Ignition Purposes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to inductor alternators for ignition purposes. It essentially pertains to inductor alternators capable of producing electrical effects suitable for the ignition of combustible charges in internal combustion motors. It is for a division of the subject matter shown and disclosed in our application for Letters Patent Serial No. 76,559, filed September 25th, 1901.

The principal object of this invention is to provide an inductor generator adaptable for use in connection with a reversible motor, so that the electric generator will produce the requisite electromotive force to cause a spark in the engine cylinder at the proper instant, irrespective of the direction in which the crank shaft of the engine is rotating.

Figure 1 is an edge elevation of an inductor generator embodying our improvement, a portion only of the inductor-carrying element being shown. Fig. 2 is a side elevation of the parts shown in Fig. 1. Fig. 3 is a side elevation of the pole piece, detached. Fig. 4 is a perspective view of the same.

In the drawings,—1 indicates a permanent magnet preferably horseshoe or U-shaped in form. It is composed of as many magnet sections, arranged in series, as may be required to establish the desired density of magnetic field.

4 is a frame, preferably of non-magnetic material, and employed to position and support in proper relation to each other the normally stationary parts of our inductor alternator.

9 are clamp pieces or cleats arranged to bear against the outermost magnet section in the series, and 7 are bolts or screws extending through said cleats and into the frame 4, and adapted to clamp or bind the said frame and permanent magnets together.

21 are pole pieces composed of a suitable member of punchings or laminæ. A pair of these pole pieces is preferably used, assembled, one at either side of a suitable center piece or spacing piece 10 of non-magnetic material, and suitably bolted thereto by means of bolts 5. This non-magnetic spacing piece 10 is suitably secured to the frame 4 by means of bolts or screws 6 and 11, so as to hold the laminated pole pieces 21, in close magnetic contact with the ends or poles of the permanent magnet sections.

As shown, each one of the pole pieces has three polar projections, the center one of which serves as a coil core, and is indicated as 12, the ones at either side of it being unwound and indicated as 12′ and 12ª, respectively. A winding or coil 20 of insulated wire is slipped upon and suitably secured to the middle polar projection or coil core on each pole piece. The outer faces or polar faces of the polar projections 12, 12′, and 12ª, are suitably shaped to conform to the path of travel of a suitable inductor, hereinafter described. The polar faces on the polar projections 12, 12ª, are designated by 2, 2′, respectively, and hereinafter referred to as exciting polar faces, and the polar faces on the polar projections 12, are designated by 3, and hereinafter referred to as generating polar faces.

19 is an inductor, preferably formed of punchings or laminæ of suitable metal. This inductor is adapted to be rotated in either direction, so as to have one of its faces pass over and closely adjacent to the polar faces of the polar projections on the pole pieces by mere mechanical clearance, or, in other words, as close to said polar faces as mechanical conditions will permit. The said inductor 19 is connected with and carried by a wheel or disk F, only part of which is shown. This wheel F may be of any suitable construction, and may be the fly wheel of a motor, to the ignition apparatus of which, the induction windings of the generator are connected. The polar faces 2, 2′, 3 and the face of the inductor which passes adjacent to them, are preferably shaped to the arc of a circle struck from the axis of the wheel F as a center.

Normally the lines of magnetic force emanate in a scattered way from all sides of the magnet and for about one-half of its

length from its free ends, and some of these lines of force emanate from the pole pieces. The inductor 19, when rotated in clockwise direction, first spans the exciting polar faces 2 and causes the concentration of a dense flow of magnetic lines of force, a substantial magnetic short circuit, between the polar projections 12′ of the laminated pole pieces. The inductor then moves across the air gap between the exciting polar faces 2 and the generating polar faces 3 and causes a rapid and substantially complete diversion of the magnetic flux density, first concentrated across the exciting polar faces, into and through the coil cores 12 and across the generating polar faces, so as to establish a substantial magnetic short circuit across the generating polar faces. The inductor then leaves the generating polar faces, crosses the air gap between them and the exciting polar faces 2′, and the magnetic flux density through the induction windings is rapidly diminished, a substantial magnetic short circuit being established outside of them.

If the inductor 19 is rotated in anti-clockwise direction, it first concentrates the lines of magnetic force across the exciting polar faces 2′, 2′, then across the generating polar faces, and then across the exciting polar faces 2, 2. It will thus be seen that in either direction of rotation the inductor operates to bring about similar variations of magnetic flux density in the induction windings. This we have found to be of great importance where our electric generator is used with a reversible motor, as it insures similarly satisfactory ignition in either direction of rotation of the motor.

With an inductor alternator constructed in accordance with our invention, the inductor does not at any time move sufficiently closely to the limbs of the magnets themselves to draw or concentrate a dense magnetic flux across the limbs of the magnets above the poles thereof, but on the contrary, we have so constructed and arranged the elements of an inductor alternator for ignition purposes, that the inductor in its operation tends only to draw or concentrate the magnetic flux emanating from the magnet poles at the said magnet poles, thereby tending to prevent the shifting of the said poles and to overcome the tendency of the said poles to shift, with the consequent loss of magneto-motive force by the magnets.

The electro-motive force is generated in the inductive windings 20, as in all dynamo-electric generators, by varying the magnetic flux density in the said windings. The inductor 19 operates to cause a very rapid varying of the magnetic flux density by first establishing a substantial magnetic short circuit, *i. e.*, by concentrating the magnetic flux at a point adjacent to but outside of the induction windings, so that the magnetic flux density in the cores of said windings is practically zero, then quickly diverting the magnetic flux through the coil cores, and then, practically instantly, establishing a magnetic short circuit outside of the coil cores and causing the magnetic flux density in said coil cores to again drop to substantially zero.

With multi-cylinder motors, two or more inductors are used, there being one inductor for each cylinder, as will readily be understood, unless the periods of ignition of two or more of said cylinders occur at the same period of the stroke at alternate revolutions. In any case, an inductor must be provided and so arranged that it will pass over and span the generating polar faces when the ignition of a combustible charge is required. Also, when the motor is arranged for two or more ignitions, usually termed "late, early," etc., it may prove desirable to use one inductor for each of such ignitions, and to mount and hold stationary the permanent magnet and induction windings.

What we claim is—

1. In an inductor generator for ignition purposes, the combination of a permanent magnet, a pair of pole pieces each held in magnetic contact with one pole of said magnet and having three polar projections, a coil of wire in inductive relation to the middle polar projections on said pole pieces, and an unwound inductor movable relative to said polar projections to concentrate the magnetic flux emanating from the poles of said magnet first outside of said wire wound polar projections and between said pole pieces, then across said wire wound polar projections and then outside of said wire wound polar projections and between said pole pieces in rapid succession.

2. In an inductor generator for ignition purposes, the combination of a field magnet, a pair of pole pieces each in magnetic contact with one of the poles of said field magnet and having three polar projections, two coils of wire, one in inductive relation to the middle polar projection on one pole piece and the other in inductive relation to the middle polar projection on the other pole piece, and an unwound inductor movable in either direction to concentrate between said pole pieces the magnetic flux emanating from the poles of said magnet, first across unwound polar projections, then across the said wound middle polar projections and then across the other unwound polar projections.

3. In an inductor generator for ignition purposes, the combination of a permanent magnet, laminated pole pieces in magnetic contact with the poles of said magnet, each pole piece having a coil core and polar pro-

jections with exciting polar faces on opposite sides of said coil core, coils of insulated wire in inductive relation to said coil cores, and a laminated unwound inductor mounted on a rotatable support.

4. In an inductor generator for ignition purposes, the combination of a permanent magnet, pole pieces in magnetic contact with the poles of said magnet, each pole piece having three polar projections, coils of insulated wire in inductive relation to the middle polar projection on said pole pieces, the other polar projections on each pole piece being unwound, and an unwound inductor movable relative to said polar projections.

5. In an inductor generator for ignition purposes, the combination of a permanent magnet, a pair of pole pieces, each in magnetic contact with one of the poles of said magnet, one of said pole pieces carrying three polar projections having polar faces arranged in series in the arc of a circle, a coil of insulated wire in inductive relation to the middle polar projection of said series, the polar projections at either side of said middle one being unwound, and an inductor rotatable in either direction relative to the polar faces of said polar projections to intermittently establish substantial magnetic-short circuits between each one of said polar projections and the opposite pole piece.

6. In an inductor generator for ignition purposes, the combination of a permanent magnet, a pair of pole pieces, each in magnetic contact with one of the poles of said magnet and having three polar projections each provided with polar faces, an induction winding on the middle projection of each one of said pole pieces, and an unwound rotatable inductor shaped and correlated to the said polar faces on said pole pieces and arranged when rotated in either direction to first concentrate the lines of magnetic force emanating from said magnet poles between said pole pieces outside of said induction windings, then rapidly to divert the magnetic flux through said induction winding, and then as rapidly divert said magnetic flux outside of said induction windings, and between said pole pieces.

7. In an inductor generator for ignition purposes, the combination of a bi-polar permanent field magnet, a pair of pole pieces, each held in magnetic contact with one of the poles of said field magnet and in suitable relation to each other, and each having three polar projections, each of which terminates in a polar face, two coils of wire, each wound in inductive relation on the middle polar projection of each said pole piece, a movable unwound inductor, arranged to establish, by its movements, a magnetic path through itself and alternately through the unwound polar projections and the wound polar projections of the said pole pieces.

8. In an electric generator, the combination of a field magnet provided with pole pieces, three polar projections carried by one of said pole pieces, a winding on the middle polar projection, and an unwound inductor adapted cyclically to short-circuit the magnetic flux outside of said winding, then divert the flux through said winding, and then again divert the flux outside the winding.

9. In an electric generator, the combination of a field magnet provided with pole pieces, three polar projections carried by each of said pole pieces, windings on the middle polar projections, and an unwound inductor adapted cyclically to short-circuit the magnetic flux outside of said windings, then divert the flux through said windings, and then again divert the flux outside the windings.

In witness whereof we affix our signatures, in the presence of witnesses.

HENRY JOSEPH PODLEŠAK.
TESLA EMIL PODLESAK.

Witnesses to the signature of Henry Joseph Podlešák:

J. SŌBEK,
J. TOMASEK.

Witnesses to the signature of Tesla Emil Podlesak:

LILLIAN B. SHERMAN,
JOHN H. BONSALL.

808

H. J. PODLEŠÁK & T. E. PODLESAK.

INDUCTOR GENERATOR FOR IGNITION PURPOSES.

APPLICATION FILED JAN. 28, 1908.

948,483. **Patented Feb. 8, 1910.**

Fig. 1.

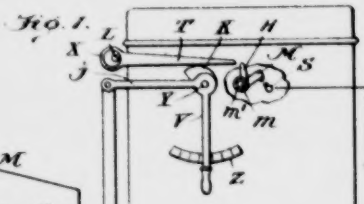


Fig. 3.

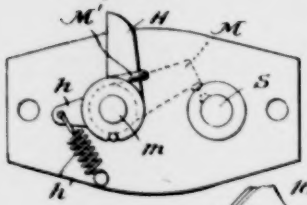
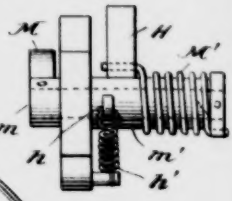


Fig. 4.



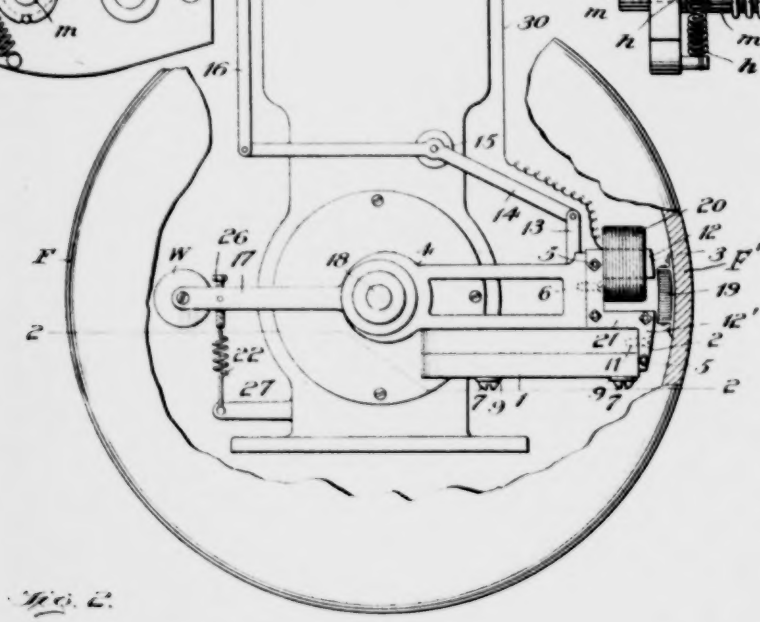
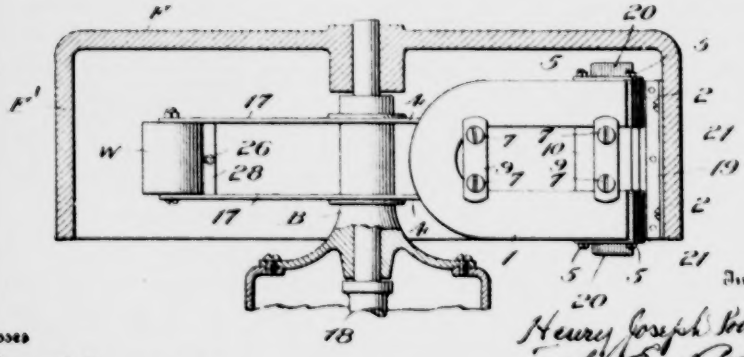


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY JOSEPH PODLEŠÁK, OF CHICAGO, ILLINOIS, AND TESLA EMIL PODLÉSAK, OF MORRISTOWN, NEW JERSEY.

INDUCTOR-GENERATOR FOR IGNITION PURPOSES.

948,483. Specification of Letters Patent. Patented Feb. 8, 1910.

Original application filed September 25, 1901, Serial No. 76,559. Divided and this application filed January 28, 1908. Serial No. 413,069.

To all whom it may concern:

Be it known that we, HENRY JOSEPH PODLEŠÁK and TESLA EMIL PODLÉSAK, residing at Chicago, in the county of Cook and State of Illinois, and Morristown, county of Morris, State of New Jersey, respectively, have invented certain new and useful Improvements in Inductor-Generators for Ignition Purposes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to ignition apparatus for internal combustion engines.

The subject matter herein presented is for a division of the subject matter presented in our application, Serial No. 76,559, filed September 25th, 1901, for inductor generators for ignition purposes.

One of the objects of our invention is to provide an inductor alternator which is readily adaptable to all classes of internal combustion motors, such as automobile, marine, and stationary motors, and to the special requirements of each class, and is readily adjustable for varying the period of generation of maximum electro-motive force relative to the position of a piston within an engine cylinder.

Another object of our invention is to so connect and correlate an electric generator to the ignition apparatus of an internal combustion motor, that the ignition apparatus and the said generator are simultaneously adjusted for the purpose of causing a spark to occur earlier or later in the stroke of the motor piston. This simultaneous adjustment of the electric generator with the ignition apparatus is for the purpose of insuring that the generator will produce the requisite electro-motive force for any position of adjustment of the ignition apparatus.

Still another object of our invention is to arrange and mount an electric generator in the fly wheel of an engine in such manner that the parts of the generator will be completely protected.

Figure 1 is a side elevation of a motor fitted with an inductor alternator embodying our invention, the fly wheel of the motor being shown partly broken away and partly in section. Fig. 2 is a section on the line 2—2, Fig. 1. Fig. 3 is an end elevation of parts of the igniter apparatus, detached. Fig. 4 is a side view of the parts shown in Fig. 3.

In the drawings—A represents an internal combustion motor of any well known construction.

B indicates the crank shaft bearing on the fly wheel side of the motor, the crank shaft itself being represented by 18.

F is the fly wheel of the motor having an inwardly extending flange F'.

1 indicates a permanent magnet, preferably horseshoe or U-shaped in form. It is composed of as many magnet sections, arranged in series, as may be required to establish the desired density of magnetic field.

4 is a frame, preferably of non-magnetic material, and employed to position and support in proper relation to each other the normally stationary parts of our inductor alternator. In the drawings, this supporting and positioning frame is mounted upon the crank shaft bearing B, and is capable of adjustment about the axis of the said crank shaft.

9 are clamp pieces or cleats arranged to bear against the outermost magnet section in each series, and 7 are bolts or screws extending through said cleats and into the frame 4, and adapted to clamp or bind the said frame and permanent magnet together.

21 are pole pieces composed of a suitable number of punchings or laminæ. A pair of these pole pieces is preferably used, assembled, one at either side of a suitable center piece or spacing piece 10 of non-magnetic material, and suitably bolted thereto by means of bolts 5. This non-magnetic spacing piece 10 is suitably secured to the frame 4 by means of bolts or screws 6 and 11, (shown in dotted lines), so as to hold the

laminated pole pieces 21 in close magnetic contact with the ends or poles of the permanent magnet-sections.

Each one of the pole pieces has a pair of polar projections 12, 12', the former of which serves as a coil core upon which a winding or coil 20 of insulated wire is slipped, and to which the said coil is suitably secured. The coil core 12 on each pole piece is spaced by a suitable air gap from the adjacent polar projection 12' on said pole piece. The outer faces or polar faces of the said polar projections 12, 12', are suitably shaped to conform to the path of travel of a suitable inductor, hereinafter described. The polar faces on the polar projections 12' are designated by 2, and hereinafter referred to as exciting polar faces, and the polar faces on the polar projections 12 are designated by 3, and hereinafter referred to as generating polar faces.

19 is an inductor, preferably formed of punchings or laminæ of suitable metal. This inductor is adapted to be rotated so as to have one of its faces pass over and closely adjacent to the exciting polar faces 2 and the generating polar faces 3, by mere mechanical clearance, or, in other words, as close to said polar faces as mechanical conditions will permit. We have shown the said inductor 19 as secured to and carried by the flange F' of the fly wheel F of the motor. The polar faces 2, 3, and the face of the inductor which passes adjacent to them are shaped to the arc of a circle struck from the axis of the crank shaft as a center.

Normally the lines of magnetic force emanate in a scattered way from all sides of the magnet and for about one-half of its length from its free ends, and some of these lines of force emanate from the pole pieces. The inductor 19, in operation, first spans the exciting polar faces 2 and causes the concentration of a dense flow of magnetic lines of force, a substantial magnetic short circuit, between the polar projections 12', 12', of the laminated pole pieces. The inductor then moves across the air gap between the exciting polar faces and the generating polar faces and causes a rapid and substantially complete diversion of the magnetic flux density, first concentrated across the exciting polar faces, into and through the coil cores 12 and across the generating polar faces, so as to establish a substantial magnetic short circuit across the generating polar faces. The inductor then leaves the generating polar faces, and the magnetic flux density through the induction windings is rapidly diminished, due to the fact that the lines of magnetic force instantly seek the path of least reluctance between the magnet poles.

In Figs. 1 and 2, the frame 4 of the inductor alternator is shown pivoted or journaled on the bearing B of the crank shaft at one side of the motor, as hereinbefore mentioned, in order that it may be oscillated through a part of a revolution to vary the instant of generation of maximum electromotive force, so as to accommodate the generator for operation with mechanism for varying the period of ignition within the engine cylinder.

13 is a link connected at its lower end with the generator frame, and having its upper end suitably connected to one end of a lever 14, which is pivoted at 15 to the frame of the motor.

The mechanism for advancing or retarding the time of ignition within the engine cylinder may be of any suitable and well known type. For the purpose of illustrating our invention, we have shown in the drawings, more or less diagrammatically, such a mechanism.

K is a cam connected to move with a bell crank lever V, said lever being pivoted at Y to the cylinder of the motor, and adapted to be oscillated and retained in any desired position of adjustment by the engagement of its downwardly extending arm with one of the teeth of a rack section Z.

16 is a link connected at its lower end to the upper end of the lever 14, and having its upper end connected to the outer end of the arm *j* of the bell crank lever V.

The make and break ignition mechanism for the engine may be of any well known and suitable construction. We have shown it as embodying the general features of construction and operation disclosed in Letters Patent of the United States No. 630,621, to C. H. Morse, Jr., and F. G. Hobart, for gas engine igniter, dated August 8th, 1899.

S is a suitably insulated stationary electrode.

M is the movable electrode having a shaft *m* extending through one wall of the cylinder. Upon the outer end of the shaft *m* is loosely mounted a sleeve *m'* having an upwardly projecting arm H and a laterally projecting arm *h*.

h' is a spring having one end secured to the free end of the arm *h* and its other end connected to the motor cylinder and arranged to normally hold the electrodes M and S out of contact with each other.

M' is a coiled spring arranged around the electrode shaft *m* and between its outer end and the sleeve *m'* thereon, so as to form a flexible connection between the said sleeve and shaft, which will permit the sleeve to rotate relative to the shaft against the action of said spring.

T is a reciprocable trip rod, which has one end mounted on an eccentric X carried by

the shaft L, the latter being driven from a suitable member of the motor. The driving connection for the shaft L has, for the sake of clearness, not been shown. The trip rod T rests upon and is guided by the cam K, and at its free end is arranged to engage the upper end of the electrode-operating arm H. During the operation of the motor, the trip rod T at the proper instant, engages the arm H and moves the said arm so as to cause the movable electrode M to engage the stationary electrode S. The trip rod then passes or trips off the arm H, and the spring *h'* immediately causes the separation of the electrode M from the electrode S, at which interval the spark occurs between the electrodes. By adjusting the cam K, the trip rod T is caused to bring about the separation of the electrodes and the consequent creation of a spark earlier or later in the stroke of the piston.

Adjusting the bell crank lever Y to the left, or clockwise, will turn the cam K so as to elevate the free end of the trip rod T. This will cause the earlier disengagement of the electrodes within the cylinder, thus advancing the time of ignition. Adjusting the bell crank lever Y to the right, or anti-clockwise, will relatively lower the free end of the trip rod T, which will cause a later separation of the electrodes within the engine cylinder and the consequent retardation of the time of ignition. The connections between the said bell crank lever V and the frame 4 are so proportioned and correlated that, as the period of ignition in the cylinder is changed by the operation of the bell crank lever to either advance or retard the spark, the electric generator is also shifted or adjusted into a position to generate the requisite electro-motive force at the moment the electrodes of the make and break apparatus in the cylinder separate to produce the desired spark.

W is a weight secured between the arms 17 extending from the frame 4, the said weight being suitable to counterbalance the weight carried at the opposite end of the said frame 4. 22 is a spring having its lower end attached to a bracket 27 carried by the motor frame, and its upper end secured to an adjusting screw 26 which extends through a cross bar 28 carried by the arm 17. This spring serves to supplement the weight W and affords an additional means for facilitating the adjustment of the electric generator.

The winding on each pole piece may be in one or more separate coils of any suitable construction, all of which are suitably and properly connected together, either in parallel or in series, as may be desired. A suitable connection from the terminals of the induction windings may be made with the electrodes of the igniter mechanism. For this purpose we have shown an insulated electric conductor 30 electrically connecting the stationary electrode S with the generating windings of the electric generator. The movable electrode M is suitably grounded.

In the embodiment of our invention herein set forth and described for the purpose of illustration, we have shown one of our generators arranged within the fly wheel in protected position and in such manner as to economize space, which is of considerable importance in small motors, especially for automobile and marine work.

What we claim is—

1. In an apparatus of the class described, the combination of an igniter-mechanism associated with an internal-combustion engine, a shaft projecting from the engine-casing, a magnetic field-frame adjustably mounted upon said shaft and provided with a winding, a movable inductor for varying the magnetic flux through said winding, an arm pivotally connected at one end with said field-frame and at the other end with said igniter-mechanism, and means for actuating said arm for simultaneously adjusting said igniter-mechanism and said field-frame.

2. In an apparatus of the class described, the combination of an igniter-mechanism associated with an internal-combustion engine, a shaft projecting from the engine-casing, a frame of non-magnetic material adjustably mounted upon said shaft, a permanent magnet secured to said frame and provided with a winding, a movable inductor for varying the magnetic flux through said winding, an arm pivotally connected at one end with said field-frame and at the other end with said igniter-mechanism, and means for actuating said arm for simultaneously adjusting said igniter-mechanism and said field-frame.

3. In an apparatus of the class described, the combination of an igniter-mechanism associated with an internal-combustion engine, a shaft projecting from the engine-casing, a magnetic field-frame adjustably mounted upon said shaft and provided with a winding, a flywheel supported by said shaft, an inductor carried by said flywheel for varying the magnetic flux through said winding, an arm pivotally connected at one end with said field-frame and at the other end with said igniter-mechanism, and means for actuating said arm for simultaneously adjusting said igniter-mechanism and said field-frame.

4. In an apparatus of the class described, the combination of an igniter-mechanism associated with an internal-combustion engine, a shaft projecting from the engine-

casing, a frame of non-magnetic material adjustably mounted upon said shaft, a permanent magnet secured to said frame and provided with a winding, a flywheel supported by said shaft, an inductor carried by said flywheel for varying the magnetic flux through said winding, an arm pivotally connected at one end to said frame and at the other end with said igniter-mechanism, and means for actuating said arm for simultaneously adjusting said igniter-mechanism and said field-frame.

In witness whereof we affix our signatures, in the presence of two witnesses.

HENRY JOSEPH PODLEŠÁK.
TESLA EMIL PODLÉSAK.

Witnesses to the signature of Henry Joseph Podlešák:

J. SOBEK.
F. PTÁČEK.

Witnesses to the signature of Tesla Emil Podlésak:

LILLIAN B. SHERMAN,
JOHN H. BONSALL.

L. H. WATTLES.

SPARKING IGNITER.

APPLICATION FILED JUNE 1, 1910.

990,935.

Patented May 2, 1911.

3 SHEETS—SHEET 1.

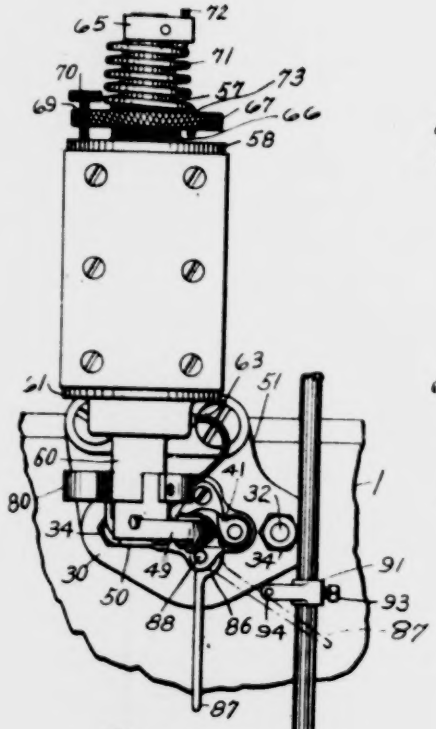


Fig. 1

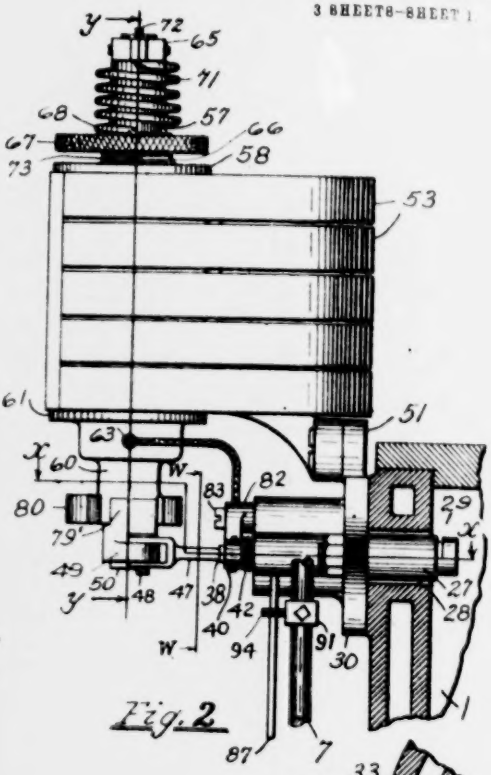


Fig. 2

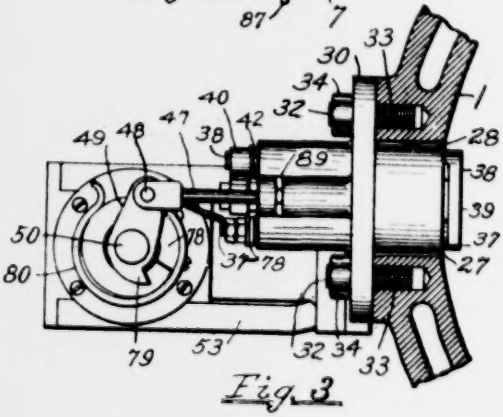


Fig. 3

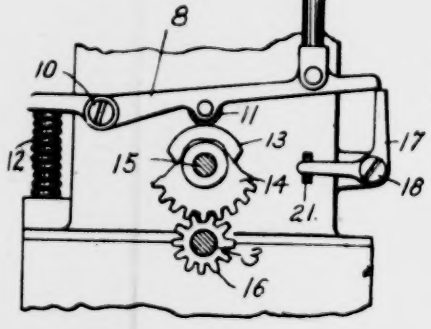




Fig. 4

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By
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SPARKING IGNITER.

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3 SHEETS—SHEET 2.

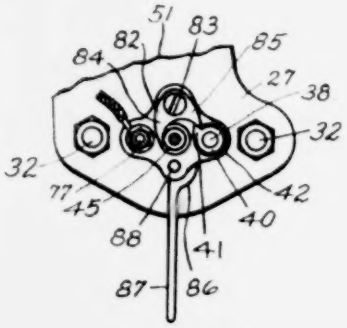


Fig. 5

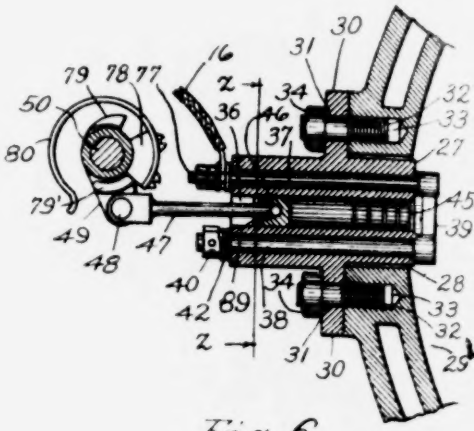


Fig. 6

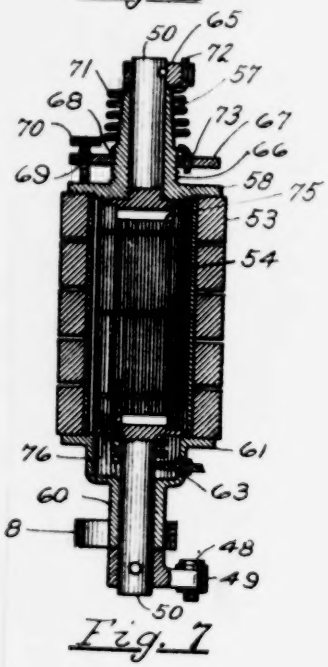


Fig. 7

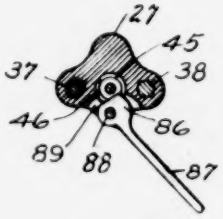


Fig. 8

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SPARKING IGNITER.

APPLICATION FILED JUNE 1, 1910.

990,935.

Patented May 2, 1911

3 SHEETS—SHEET 3.

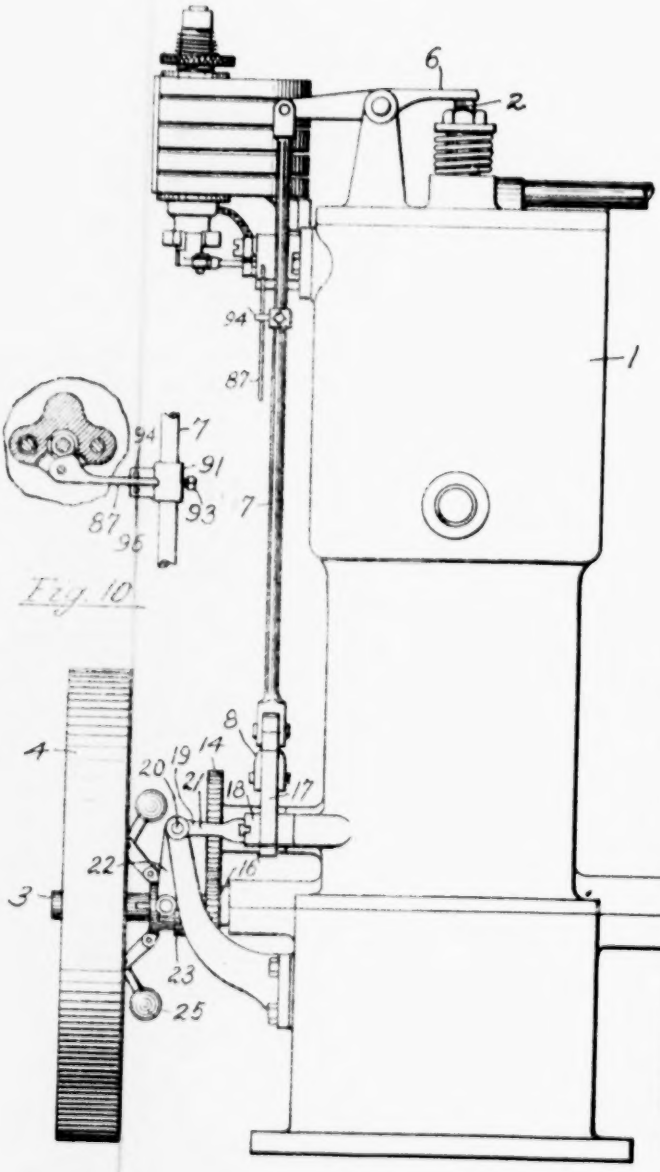


Fig. 9

Fig. 10

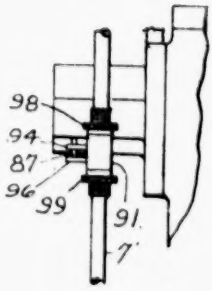


Fig. 11

Witnesses:

Alfred H Whatley

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By Attorney

Horatio E. Bellows

UNITED STATES PATENT OFFICE.

LUTHER H. WATTLES, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF TO MATIE C. MESSLER, OF PAWTUCKET, RHODE ISLAND.

SPARKING IGNITER.

990,935. Specification of Letters Patent. **Patented May 2, 1911.**

Application filed June 1, 1910. Serial No. 564,472.

To all whom it may concern.

Be it known that I, LUTHER H. WATTLES, a citizen of the United States, residing at Providence, in the county of Providence and state of Rhode Island, have invented certain new and useful Improvements in Sparking Igniters, of which the following is a specification.

My invention relates to sparking ignition devices for internal combustion engines. In my prior Patent No. 909,264 issued Jan. 12, 1909, is shown a device of this character wherein a sparking current is generated by the unignited compressed engine charge.

The essential objects of the present invention are to regulate the instant of sparking; to secure a maximum efficiency of the engine charge; to prevent, when starting the engine, injury to the operator due to the initial expansion of the compressed charge while manipulating the fly wheel; to afford a positive and direct electrical communication between the electrodes and the magneto armature; to cushion the outward stroke of the piston; to make it possible to dispense with elaborate mechanism for returning the piston to original position, and to dispense with the generator piston valve; to simplify and cheapen the structure; and to render the same available upon engines of various types without reorganization.

Other objects will be hereinafter pointed out.

To the above ends primarily my invention consists in the construction, combination, and mode of operation of parts set forth in and falling within the scope of the claims hereto appended.

In the accompanying drawings which form a part of this specification and in which like reference characters indicate like parts throughout the views, Figures 1, 2, and 3, are front, side and bottom plan views respectively of my novel apparatus mounted in the side of an engine cylinder, showing in Fig. 1 also a usual engine valve operating mechanism, Fig. 4, a bottom plan view of the plug, Figs. 5, 6, and 7, sections on line w, w, x, x, and y, y, of Fig. 2, Fig. 8, a section on line z, z, of Fig. 6, Fig. 9, a side elevation of an upright four cycle internal combustion engine equipped with my device, and Figs. 10 and 11, detail views of modified means for actuating the piston locking member.

In the illustrated construction the engine comprises a cylinder or casting 1, exhaust valve, 2, crank shaft 3, fly wheel 4, and the usual valve operating mechanism, consisting of the valve lever 6, valve connecting rod 7, cam lever 8, stud 10, cam roll 11, cam lever spring 12, cam 13 integral with driven gear 14 loose on stud 15, driving gear 16, bell crank lever 17 upon its stud 18, connecting bell crank lever 19 pivoted on stud 20 and whose forked arm 21 engages lever 17 and whose other arm 22 is connected with the sliding sleeve 23, controlled by the fly ball governor 25. It is in conjunction with the above described familiar parts that my novel device is in this instance set forth.

My device comprises a plug 27 extending into an opening 28 in the casting 1 to which it is engaged in any convenient manner with its end face exposed in the compression area of the combustion chamber 29. In the present instance the plug is provided with an external flange 30 with perforations 31 for screws 32 entering threaded openings 33 in the casting and secured by nuts 34. The plug 27 preferably extends beyond the face of the casting and is longitudinally bored to form a chamber 36. Fixed within the plug and insulated therefrom is an electrode 37, and axially movable in the plug is the grounded electrode 38 having its outer end extending beyond the face of the plug and provided with a contact arm 39 within the combustion chamber. Integral with or fixed to the outer end of the electrode 38 is a collar 40 provided with a peripheral lug 41. A spring 42 surrounding the electrode has its ends fixed in the collar and in the plug respectively. Mounted in the chamber 36 is a piston 45 provided with a beveled outer end as at 46. A connecting rod 47 connects the piston through a crank pin 48 with a crank arm 49 fixed to an armature shaft 50 of an electric generator supported by a bracket arm 51 fixed to the plug.

The generator or magneto may be of any usual construction and in this instance comprises horse shoe magnets 53 surrounding a core 54 whose armature 50 has an upper vertical bearing 57 provided with a flange or base 58 fixed to the top of the magnets. The lower end of the armature shaft is journaled in a bearing 60 provided with a flange 61 fixed to the bottom of the magnets, and provided with an opening 63 in its side wall.

Fixed to or integral with the upper end of the shaft 50 is a collar 65. The exterior of the bearing 57 has threads 66. An annular disk 67 has threads 68 engaging threads 66 and is provided with a threaded perforation 69 to receive a thumb screw 70 whose end engages the flange 58. Surrounding the bearing 57 is a spring 71 whose upper end 72 is fixed to the collar 65, and whose lower end 73 is fixed to the disk 67. One terminal 75 of the winding is grounded in the core while the other terminal 76 is formed in a loose spiral around the shaft 50 and passes through the opening 63 to the binding post 77 upon the outer end of the electrode 37, thus completing the circuit through the sparking finger 39 and thence back through the magneto to the armature.

In order to limit excessive travel of the crank arm 49 a block 78 fixed to the side of the bearing 60 extends into the path of lugs 79 and 79′ upon the arm. The outward stroke of the piston is in this instance cushioned by a curved spring 80 fixed to the block 78 and whose free end is in the path of the arm 49. The spring 80 may be omitted when the spring 71 is sufficiently stiff. A member for actuating the electrode 38, as shown in Fig. 5, consists of a lever of the first principle 82 pivoted by a pin 83 to the outer face of the plug 27 and comprises an arm 84 in the path of the beveled portion of the piston 45, and an arm 85 in contact with the lug 41 upon the collar of the electrode 38.

A piston locking member, best shown in Fig. 8, comprises a cam shaped or offset flat head 86 and a shank or handle 87. This member is eccentrically mounted upon a pivot 88 in the plug and moves in a slot 89 opening into the chamber 36 and transversely thereof. When the shank 87 is in normal or vertical position the head 86 is out of the path of the piston 45, but when the shank is elevated the head intersects the path of the piston and prevents the outward stroke of the latter. This arm may be elevated manually at will to the position shown in broken lines in Fig. 1, where it is frictionally held, until released and permitted to fall into vertical position. The release is effected either manually or by any convenient device attached to the engine driven mechanism. Such a device consists of a vertically adjustable sleeve 91 clamped by an adjusting screw 93 to the reciprocating connecting rod 7, and provided with a laterally projecting pin 94 in the path of the shank 87.

The operation of my device is as follows. The unignited compressed engine charge in the combustion chamber 29 impels the armature piston 45 outwardly with great force partially rotating the armature shaft 50 at a high rate of speed thus generating a current in the electric circuit. This circuit is broken to create a spark in the combustion chamber by the contact of the piston 45, in its outward travel, with the lever arm 85 which through arm 85 partially rotates the electrode 38 thereby swinging the arm 39 out of contact with electrode 37. The electrode is returned by the spring 42, and the piston, by the spring 71. It will be noted that in the present instance the terminal 76 runs directly from the winding to the electrode without the intervention of a brush or any moving contact whereby a more positive electrical effect is secured.

In order to utilize the maximum power of the charge provision is made for regulating the instant of sparking relatively to the position of the engine crank, so that when the engine is running at high speed the sparking will occur earlier: and when at a low speed, later. These results are respectively secured by manually turning the disk 67 upwardly or downwardly to increase or decrease the tension of the spring 71. This adjustment can be made while the engine is in operation. The screw 70 binds the disk in adjusted position.

To avoid accident in starting the engine the magneto is held out of operative position by manually elevating the handle 87, thereby checking the advance of the piston 45 during the initial compression revolution of the fly wheel, after which the handle 87 is returned to normal vertical position either manually or automatically thereby releasing the armature piston.

In some engines it is desirable to elevate the shank 87 automatically rather than manually. In "variable quantity" engines alternate strokes of the engine piston produce varying degrees of compression. In such case regularity of movement of the armature piston 45 is insured by the continuous vibration of the shank 87. I prefer for this purpose a device like that shown in Fig. 10 comprising interspaced pins 94 and 96 which loosely engage therebetween the shank 87 which is vibrated by the rod 7. The sleeve 91 is adjustable upon the valve operating rod 7 by the screw 93, but in some instances a preferable adjusting means is that shown in Fig. 11, where this means consists of thumb nuts 98 and 99 threaded to the rod 7 above and below the sleeve 91 whereby the sleeve may be adjusted while the engine is operating.

What I claim is,—

1. In an electric sparking ignition mechanism, the combination with an engine cylinder and an ignition circuit, of an electric generator comprising an armature shaft in the circuit, and a bearing in which the armature is mounted, means actuated by the charge in the cylinder for imparting a generating throw to the armature shaft, and a spring mounted upon the bearing and en-

ing the armature shaft for returning the ature shaft to original position.

In an electric sparking ignition mechan, the combination with an engine cylin- and an ignition circuit, of an electric erator comprising an armature shaft in circuit, and a bearing in which the ar- ture is mounted, means actuated by the rge in the cylinder for imparting a gen- ting throw to the armature shaft, a ing mounted on the bearing and engag- the shaft, and means for varying the ten- of the spring.

In an electric sparking ignition mecha- m, the combination with an engine cylin- and an ignition circuit, of an electric erator comprising an armature shaft in circuit, and a bearing in which the ar- ture is mounted, means actuated by the rge in the cylinder for imparting a gen- ting throw to the armature shaft, a ro- ably adjustable member mounted upon bearing, and a spring upon the bearing gaging both the shaft and the adjustable mber.

4. In an electric sparking ignition mecha- sm, the combination with an engine cylin- r and an ignition circuit, of an electric erator comprising an armature shaft in e circuit, and a bearing in which the arma- re is mounted, means actuated by the harge in the cylinder for imparting a gen- ating throw to the armature shaft, a rota- bly adjustable member mounted upon the aring, a spring upon the bearing engaging oth the shaft and the adjustable member, nd means upon the adjustable member for aintaining said member in adjustable po- tion.

5. In an electric sparking ignition mech- nism, the combination with an engine cyl- nder, and a generator having an armature haft, of a spark plug in the cylinder pro- ided with a piston chamber opening into he cylinder, a piston in the chamber, driv- g connections between the piston and arma- ture shaft, and means upon the generator nd engaging the armature shaft for return- ng the piston to original position after each troke.

6. In an electric sparking ignition mecha- nism, the combination with an engine cylin- der, of a spark plug in the cylinder provided with a piston chamber opening into the cylin- der, a piston in the piston chamber, a fixed electrode in the plug, an axially movable elec- trode mounted in the plug, an arm on the second electrode normally in contact with the first electrode, a projection upon the sec- nd electrode, a lever provided with two rms pivotally mounted upon the plug, one f the lever arms extending normally in the path of the piston, and the other lever arm engaging the projection upon the electrode.

7. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft and bearing, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, a crank upon the armature shaft, a rod connecting the piston and crank, a lug upon the crank, and a block upon the bearing in the path of the lug.

8. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft and bearing, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, a crank upon the armature shaft, a rod connecting the piston and crank, and a spring fixed to the bearing and extending into the path of the crank.

9. In an electric sparking ignition mechanism, the combination with an engine cylinder, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, an axially movable electrode mounted in the plug, a piston in the piston chamber, means for driving the piston, means actuated by the piston for rotating the electrode, and means in the plug for locking the piston against movement.

10. In an electric sparking ignition mechanism, the combination with an engine cylinder, an ignition circuit, and an electric generator having an armature shaft, of a piston operatively connected with the generator armature shaft and actuated by the charge in the cylinder, and means for locking the piston against movement.

11. In an electric sparking ignition mechanism, the combination with the engine cylinder, the generator, the armature shaft, and the ignition circuit, of a spark plug mounted in the cylinder and provided with a piston chamber communicating with the cylinder, a piston in the chamber, driving connections between the piston and the armature shaft, a swinging locking member mounted in the plug and movable into the path of the piston and means for actuating the locking member.

12. In an electric sparking ignition mechanism, the combination with the engine cylinder, of a spark plug mounted in the cylinder and provided with a piston chamber communicating with the cylinder, and provided with a transverse slot opening into the piston chamber, a piston in the piston chamber adapted to be actuated by a compressed charge in the cylinder, and a piston locking member pivotally mounted in the plug comprising a broad head located in the slot, and a shank upon the head extending outside the plug.

13. In an electric sparking ignition mechanism, the combination with the engine cylinder, the valve connecting rod, the genera-

H. J. PODLEŠÁK & T. E. PODLESAK.

INDUCTOR GENERATOR FOR IGNITION PURPOSES.

APPLICATION FILED JAN. 28, 1908.

1,003,649.

Patented Sept. 19, 191

2 SHEETS—SHEET 1

Fig. 1.

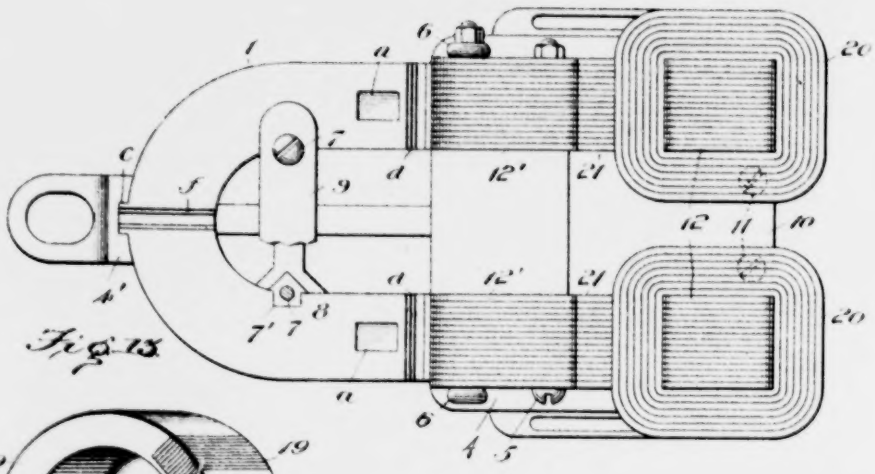


Fig. 1a

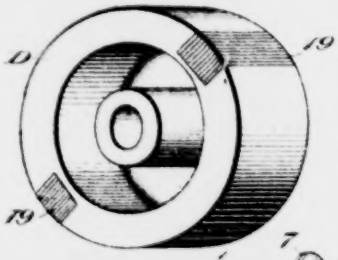
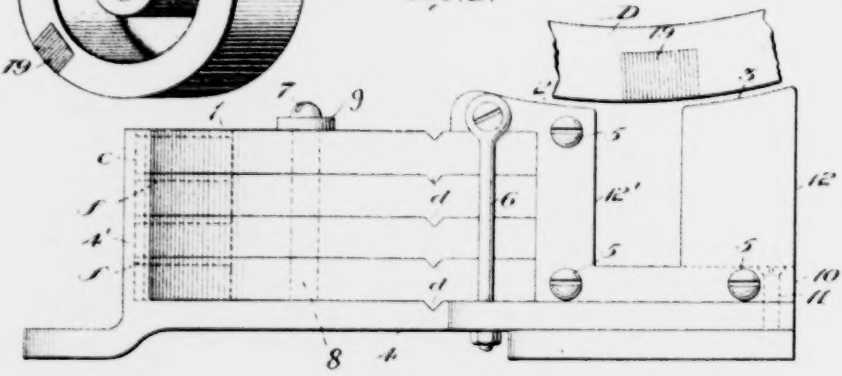


Fig. 2.



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1,003,649.

Patented Sept. 19, 1911.

2 SHEETS-SHEET 2.

Fig. 3

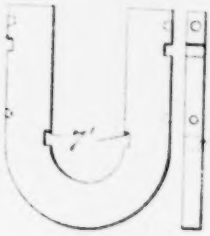


Fig. 4



Fig. 5



Fig. 6.

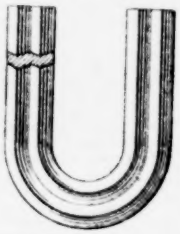


Fig. 7.

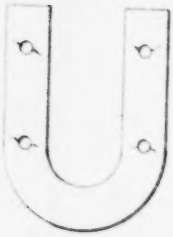


Fig. 8

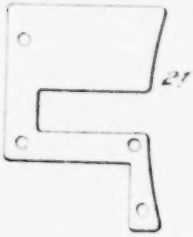


Fig. 9.

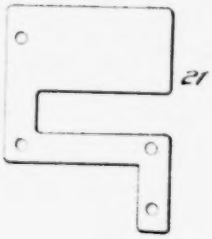


Fig. 10

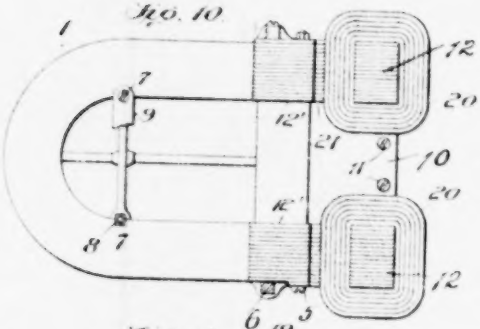


Fig. 12.

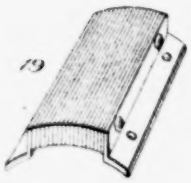


Fig. 11.



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INDUCTOR-GENERATOR FOR IGNITION PURPOSES.

1,003,649. Specification of Letters Patent. Patented Sept. 19, 1911.

Original application filed September 25, 1901, Serial No. 76,559. Divided and this application filed January 28, 1908. Serial No. 413,068.

To all whom it may concern:

Be it known that we, HENRY JOSEPH PODLEŠÁK and TESLA EMIL PODLESAK, residing at Chicago, in the county of Cook, State of Illinois, and Morristown, county of Morris, State of New Jersey, respectively, have invented certain new and useful Improvements in Inductor-Generators for Ignition Purposes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to inductor alternators for ignition purposes.

It essentially pertains to inductor alternators capable of producing electrical effects suitable for the ignition of combustible charges in internal combustion motors.

It is for a division of the subject matter shown and disclosed in our application for Letters Patent, Serial No. 76,559, filed September 25, 1901.

One of the objects of our invention is to suitably support and position the permanent magnets, employed to establish the magnetic field, without the necessity of drilling holes in them, or otherwise disarranging the molecules of the magnet metal so as to diminish the magneto-motive force of which the magnets are capable and to establish consequent poles within the magnets themselves.

Another object of our invention is to so arrange and correlate the permanent field magnets to the other elements of an inductor alternator, that in operation the permanent magnets will be kept magnetized and built up.

Still another object of our invention is to provide an inductor alternator which is readily adaptable to all classes of internal combustion motors, such as automobile, marine, and stationary motors, and to the special requirements of each class, and is readily adjustable for varying the period of generation of maximum electro-motive force relative to the position of a piston within an engine cylinder.

Figure 1 is a plan view of the relatively stationary part of an inductor alternator embodying our invention. Fig. 2 is a side elevation of the inductor alternator shown in Fig. 1. Fig. 3 is an edge elevation and side elevation showing one manner of constructing the permanent magnets. Fig. 4 is a side elevation of still another construction of permanent magnets. Fig. 5 is a view partly in edge elevation and partly in section of the magnet shown in Fig. 5. Fig. 6 is a plan view of a permanent magnet having a corrugated surface. Fig. 7 is a plan view diagrammatically illustrating results which occur when holes are drilled in the magnets. Fig. 8 is a side elevation of one form of sheet metal punching or lamina of which the pole pieces of one of the inductor alternators hereinafter described, are made. Fig. 9 is a side elevation of another shape of pole piece punching or lamina. Fig. 10 is a plan view of the normally stationary part of a modified form of an inductor alternator embodying our invention. Fig. 11 is a side elevation of the inductor alternator shown in Fig. 10. Fig. 12 is a perspective view of one style of inductor employed by us in carrying out our invention. Fig. 13 is a perspective view of an inductor-carrying disk with inductors embedded in it.

In the drawings—1 indicates a permanent magnet preferably horseshoe or U-shaped in form. It is composed of as many magnet sections, arranged in a series, as may be required to establish the desired density of magnetic field.

2 is a frame, preferably of non-magnetic material, and employed to position and support in proper relation to each other the normally stationary parts of our inductor alternator.

9 is a clamp piece or cleat arranged to bear against the outermost magnet section in the series, and 7 are bolts or screws extending through said cleat and into the frame 4, and adapted to bind or clamp the said frame and permanent magnet 1 together. In order to prevent displacement of the magnet sections in the series, relative to each other and to the said frame 4, we have devised several ways of suitably shaping or forming and securing them. In Figs. 1, 2 and 3 are shown U-shaped magnet sections having their edges suitably notched or recessed at 7' to receive the bolts 7 which clamp the series of magnet sections to the frame 4. Some easily fusible metal, as indicated at 8, may be cast around the bolts 7

and between them and the walls of the recesses in which they are inserted, and the entire structure thus made a rigid one. To further facilitate in the rigidity of the construction as an entirety, and to prevent the relative lateral movement of the magnet sections, these sections may be punched, as shown in Figs. 4 and 5, so as to form depressions *a* on one side of the magnet, and corresponding projections *b* on the other. When the magnet sections are thus formed, the projections *b* on one magnet section register with and enter the corresponding depressions *a* in the next adjacent magnet section of the series. The depressions on one face of the magnet and the corresponding projections on the other may be of any desired shape and form. In Figs. 1 and 2, we have shown V-shaped depressions and corresponding projections *d*, and trough-shaped projections *f*. Both surfaces of the magnet sections may, if desired, be corrugated, as indicated in Fig. 6, to accomplish the same results of preventing the relative displacement of any of the magnet sections of the frame 4.

In Figs. 1 and 2 we have shown a frame 4 having an upward extension 4′ suitably recessed to receive projections or lugs *c* on the yokes or toes of the magnet sections. In this case, as before described, the parts of the frame need not be accurately machined, as a readily fusible metal may be employed to fill up any cavity which may exist between the walls of the registering parts, and thus prevent relative movement of the said parts.

It will be clearly seen that many combinations of the several methods above referred to of securing the magnets immovably to the frame are possible, the exact arrangement being determined by the particular case in hand.

21 are pole pieces composed of a suitable number of punchings or laminae shown in Figs. 8 and 9. A pair of these pole pieces is preferably used, assembled, one at either side of a suitable center piece or spacing piece 10 of non-magnetic material, and suitably bolted together by means of bolts 5. This non-magnetic spacing piece 10 is suitably secured to the frame 4 by means of screws 11 and bolts 6, so as to hold the laminated pole pieces 21 in close magnetic contact with the ends or poles of the permanent magnets. Each one of the pole pieces has a pair of polar projections 12, 12′, the former of which serves as a coil core upon which a winding or coil 20 of insulated wire is slipped, and to which the said coil is suitably secured. The coil core 12, on each pole piece, is spaced by a suitable air gap from the adjacent polar projection 12′ on said pole piece. The outer faces or polar faces of the said polar projections 12, 12′, are suitably shaped to conform to the path of travel of a suitable inductor, hereinafter described. The polar faces on the polar projections 12′ are designated by 2, and hereinafter referred to as exciting polar faces, and the polar faces on the polar projections 12 are designated by 3, and hereinafter referred to as generating polar faces.

19 is an inductor, preferably formed of punchings or laminae of suitable metal. This inductor is adapted to be rotated so as to have one of its faces pass over and closely adjacent to the exciting polar faces 2 and the generating polar faces 3, or in other words, as close to said polar faces as mechanical conditions will permit. The inductor 19 may be caused to cross over or pass over the exciting polar faces and then the generating polar faces in any desired manner. In Fig. 2 we have shown the exciting and generating polar faces on the pole pieces, and the face of the inductor 19 which travels closely adjacent to them, shaped to conform to the arc of a circle about the axis of which the inductor is rotatable. Normally the lines of magnetic force emanate in a scattered way, from all sides of the magnet for about one-half of its length from its free ends, and some of these lines of force emanate from the pole pieces. The inductor 19, in operation, first spans the exciting polar faces 2 and causes the concentration of a dense flow of magnetic lines of force, *i. e.*, a substantial magnetic short circuit between the polar projections 12′ of the laminated pole pieces. The inductor then moves across the air gap between the exciting polar faces and the generating polar faces and causes a rapid and substantially complete diversion of the magnetic flux density, first concentrated across the exciting polar faces, into and through the coil cores 12 and across the generating polar faces, so as to establish a substantial magnetic short circuit across the generating polar faces. The inductor then leaves the generating polar faces and the magnetic flux density through the induction windings is rapidly diminished, due to the fact that the lines of magnetic force instantly seek the path of least reluctance between the magnet poles.

With an inductor alternator constructed in accordance with our invention, the inductor does not at any time move sufficiently close to the limbs of the magnets themselves to draw or concentrate a dense magnetic flux across the limbs of the magnets above the poles thereof, but on the contrary, we have so constructed and arranged the elements of an inductor alternator for ignition purposes, that the inductor in its operation tends only to draw or concentrate the magnetic flux emanating from the magnet poles at

e free ends of said magnet, thereby tend-
g to prevent the shifting of the said poles
nd to overcome the tendency of the said
oles to shift, with the consequent loss of
agneto-motive force by the magnets.

The electro-motive force is generated in
he inductive windings 20, as in all dynamo-
lectric generators, by varying the magnetic
ux density through the said windings. The
nductor 19 operates to cause a very rapid
arying of the magnetic flux density by
rst establishing a substantial magnetic
hort circuit, *i. e.*, by concentrating the mag-
etic flux at a point adjacent to but outside
f the induction windings so that the mag-
etic flux density in the cores of said wind-
ngs is practically zero, then quickly divert-
ng the magnetic flux through the coil cores,
nd then, practically instantly, permitting
he magnetic flux density in said coil cores
o again drop to substantially zero.

D is a disk for carrying an inductor or
nductors 19, as many inductors being em-
loyed as are requisite to cause the genera-
ion of electro-motive force at the different
ntervals required. With multi-cylinder mo-
ors, two or more inductors are used, there
eing one inductor for each cylinder, as will
eadily be understood, unless the periods
f ignition of two or more of said cylinders
ccur at the same period of the stroke at al-
ternate revolutions. In any case, an induc-
or must be provided and so arranged that
t will pass over and span the generating
olar faces when the ignition of a combus-
ible charge is required. When desired, for
the sake of appearance or greater safety, the
inductor or inductors 19 may be embedded
or inserted in a carrying disk or element
of non-magnetic material.

The advantages of securing the sections of
the permanent magnet together and to the
frame in accordance with our invention, are
many. It is well known that where the mag-
nets or magnet sections are drilled, for the
purpose of connecting them to a frame by
means of bolts or screws passed through
holes, the metal is liable to crack around the
holes, as illustrated in Fig. 7, when it is
tempered or hardened. This cracking ma-
terially diminishes the efficiency of the mag-
net, and sometimes destroys it entirely.

Where the inductors 19 are embedded in
the wheel or disk D of non-magnetic mate-
rial, carrying them, as shown in Fig. 13,
when one of the inductors passes over or
spans the polar faces of the polar extensions
on the pole pieces opposite each other, it
establishes a path of low magnetic reluc-
tance for the magnetic flux emanating from
the magnet. The section of non-magnetic
material which next passes over the said
polar faces is of such relatively high re-
luctance, that it will divert the magnetic
flux from the polar projections in which it
has been concentrated by the inductor sec-
tion preceding the said section of non-mag-
netic material.

What we claim is:—

1. In an inductor-generator for ignition
purposes, the combination of a permanent
magnet composed of sections, each section
being provided with projections and de-
pressions arranged to register with corre-
sponding depressions and projections, re-
spectively, on the sections adjacent to it, a
pair of laminated pole-pieces, each in mag-
netic contact with the poles of said mag-
net and each pole-piece provided with two
polar projections, each of which terminates
in curved polar faces, two coils of wire, each
wound in inductive relation to one projec-
tion of each of said pole-pieces, a frame
of non-magnetic material, means for hold-
ing and fastening said pole-pieces to said
frame and in suitable relation to each other,
devices for holding said magnet in magnetic
contact with said pole-pieces and to said
frame, an unwound movable inductor ar-
ranged to concentrate by its movements the
magnetic flux first through the unwound
polar projections and then through the
wound polar projections of said pole-pieces.

2. In an inductor generator for ignition
purposes, the combination of a suitable
frame of non-magnetic material, a perma-
nent magnet built up in sections, each sec-
tion having recesses to receive parts of the
connecting means between the magnet and
the said frame, and having depressions and
projections arranged to register with cor-
responding projections and depressions, re-
spectively, on the sections adjacent to it,
means for clamping the permanent magnet
to the frame, including bolts arranged to
enter the recesses in said magnet sections,
laminated pole pieces secured to said frame
and each in magnetic contact with one of the
poles of said magnet, induction windings in
inductive relation to said pole pieces, and
an unwound inductor movable relative to
said pole pieces to vary the magnetic flux
density in said induction windings.

3. In an inductor-generator for ignition
purposes, the combination of a permanent
field-magnet, a pair of laminated pole-
pieces in magnetic contact with the poles of
said magnet and having each a pair of polar
projections, a non-magnetic support directly
in contact with said pole-pieces, a winding
surrounding one of the polar projections on
each of said pole-pieces, the other polar pro-
jection on each pole-piece being unwound,
connections between said pole-pieces and said
support for rigidly clamping the pole-pieces
to said magnet and to said support, an in-
ductor movable to periodically vary the
magnetic flux through said windings, and a
rotatable member of non-magnetic material
in which said inductor is embedded.

4. In an inductor-generator for ignition purposes, the combination of a permanent magnet composed of sections, each section having depressions and projections arranged to register with corresponding projections and depressions, respectively, on the sections adjacent to it, whereby relative displacement of the sections is prevented, a suitable frame of non-magnetic material, means for clamping the permanent magnet to the frame, laminated pole-pieces in magnetic contact with the poles of said magnet, connections between said pole-pieces and said frame for rigidly clamping the pole-pieces to the frame, said connections passing outside of the permanent magnet to avoid perforating the same, a winding on said pole-pieces, and an inductor movable in proximity to said pole-pieces to vary the magnetic flux through said winding.

5. In an inductor generator for ignition purposes, the combination of a permanent magnet, a pair of laminated pole pieces, each held in magnetic contact with one of the poles of said magnet, extending laterally therefrom and having a plurality of polar projections with curved polar faces disposed at one side of the plane of the magnet and relatively remote from the poles of said magnet, two coils of wire, each in inductive relation to one polar projection on each pole piece, means formed of non-magnetic material connecting the said pole pieces together and holding them suitably spaced apart and in contact with the poles of said magnet, and an unwound inductor movable relative to the polar faces of said polar projections, and adapted to concentrate the magnetic flux emanating from the poles of said magnet only between said pole pieces, and alternately across the polar faces of the unwound and then the wound polar projections on said pole pieces.

6. In an inductor-generator for ignition purposes, the combination of a suitable frame of non-magnetic material, a permanent magnet composed of sections provided with recesses, each section having depressions and projections arranged to register with corresponding projections and depressions on the sections adjacent to it, means arranged to enter the recesses in said sections for clamping the permanent magnet to the frame, laminated pole-pieces secured to said frame and each in magnetic contact with one of the poles of said magnet, a winding on said pole-pieces, and an inductor movable in proximity to said pole-pieces to vary the magnetic flux through said winding.

7. In an inductor-generator for ignition purposes, the combination of a permanent magnet composed of a plurality of sections provided with recesses, a frame of non-magnetic material, means for clamping said frame and magnet together, said clamping means including members fitted to enter said recesses, a filling of readily fusible metal between said members and the walls of the recesses for holding the members firmly in place, a pair of pole-pieces secured to said frame and each held in magnetic contact with one of the poles of said magnet, a pair of polar projections provided on each pole-piece, a winding on one of said polar projections, and an inductor movable in proximity to said polar projections to vary the magnetic flux through said winding.

8. In an inductor-generator for ignition purposes, the combination of a frame of non-magnetic material, a pair of pole-pieces secured to said frame and each provided with two polar projections, a winding arranged on one of said pole-pieces, a permanent field magnet composed of sections and having its poles in magnetic contact with said pole-pieces, connecting devices for holding said magnet to said frame, the sections of said magnet being suitably recessed to receive parts of said connecting devices, and a movable inductor arranged to concentrate the magnetic flux alternately through one pair and then through the other pair of polar projections to vary the magnetic flux through said winding.

9. In a magnetic field structure, the combination of a permanent magnet, a pair of pole-pieces therefor, a non-magnetic support having a flat engaging surface directly in contact with said pole-pieces and said magnet, and connections between said pole-pieces and said support for rigidly clamping the pole-pieces to said magnet and to said support.

10. In a magnetic field structure, the combination of a permanent magnet of horse-shoe shape, a pair of pole-pieces provided with extensions adapted to rest upon the face of said magnet, a non-magnetic support directly in contact with said pole-pieces, and connecting members secured to said extensions and to said support for rigidly clamping the pole-pieces to said magnet and to said support.

11. In a magnetic field structure, the combination of a permanent magnet provided with recesses, a non-magnetic support for said magnet, a fastening device including bolts arranged to enter said recesses for clamping the magnet to the frame, and a filling metal cast around the bolts in said recesses whereby the magnet and the fastening device are rigidly connected together.

12. In an inductor-generator for ignition purposes, the combination of a suitable support of non-magnetic material, a permanent magnet composed of sections provided with recesses, laminated pole-pieces secured to said support and in magnetic contact with the poles of said magnet, means arranged to enter said recesses for clamping and hold

ing the magnet to the support independently of the pole-pieces, said pole-pieces being provided with a winding, and an inductor movable in proximity to said pole-pieces to vary the magnetic flux through the winding.

13. In an inductor-generator for ignition purposes, the combination of a suitable frame of non-magnetic material, a permanent magnet composed of sections, each section having depressions and projections arranged to register with corresponding projections and depressions on the sections adjacent to it, means for clamping said magnet to the frame, laminated pole-pieces in magnetic contact with the poles of said magnet, a winding on one of said pole-pieces, and an inductor movable in proximity to said pole-pieces to vary the magnetic flux through said winding.

14. In an inductor generator for ignition purposes, the combination of a frame of non-magnetic material, a pair of pole-pieces secured to said frame and each provided with two polar projections, two coils of wire, one in inductive relation to one of said projections on each pole-piece, a permanent field magnet composed of sections and having its poles in magnetic contact with each said pole-piece, connecting devices for holding said magnet in magnetic contact with said pole-pieces, the sections of said magnet being suitably recessed to receive parts of said connecting devices, and a movable inductor arranged to concentrate the magnetic flux alternately through one pair and then through the other pair of polar projections to vary the magnetic flux through said coils of wire.

15. In an inductor generator for ignition purposes, the combination of a frame of non-magnetic material, a pole-piece secured to said frame and provided with two polar projections, a coil of wire in inductive relation to one of said projections, a permanent field magnet composed of sections and having its poles in magnetic contact with said pole-piece, connecting devices for holding said magnet in magnetic contact with said pole-piece, the sections of said magnet being suitably recessed to receive parts of said connecting devices, and a movable inductor arranged to concentrate the magnetic flux alternately through one and then through the other of the polar projections to vary the magnetic flux through said coil of wire.

In witness whereof we affix our signatures, in the presence of two witnesses.

HENRY JOSEPH PODLEŠÁK.
TESLA EMIL PODLESAK.

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F. PTÁČEK.

Witnesses to the signature of Tesla Emil Podlesak:

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LOW TENSION SPARKING MECHANISM FOR GAS ENGINES.

APPLICATION FILED FEB. 17, 1909.

1,022,642.

Patented Apr. 9, 1912.

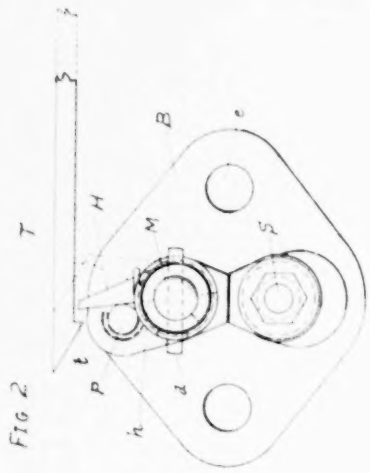


FIG 2

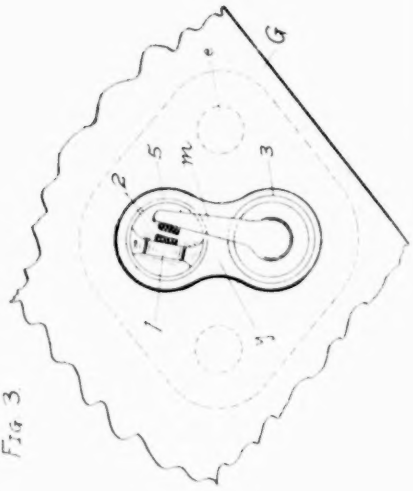


FIG 3

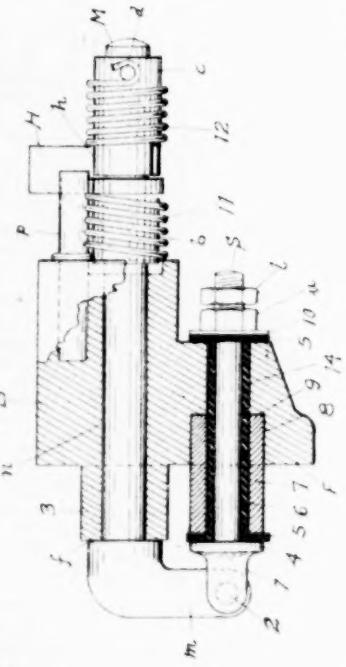


FIG 1.

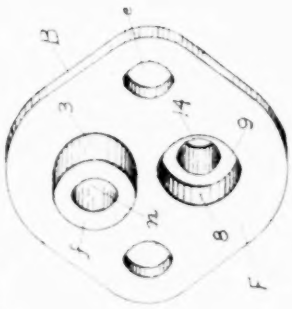


FIG 4.

WITNESSES

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LOW-TENSION SPARKING MECHANISM FOR GAS-ENGINES.

1,022,642. Specification of Letters Patent. Patented Apr. 9, 1912.

Application filed February 17, 1909. Serial No. 478,355.

To all whom it may concern:

Be it known that I, HENRY J. PODLEŠÁK, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented new and useful Improvements in Low-Tension Sparking Mechanism for Gas-Engines, of which the following is a clear, full, and exact description.

The object of the present invention, broadly speaking, is to provide an improved construction of said sparking mechanism, possessing maximum mechanical efficiency, requiring small space and a small port through which the electrodes are introduced into the combustion chamber, and so designed as to reduce the cost of manufacture to a minimum.

Other objects and advantages of this invention will appear in the following specification and the accompanying drawings, in which:

Figure 1 is an elevation, partly sectional; Fig. 2 is a side elevation, showing the electrode actuating mechanism; Fig. 3 is another side elevation, showing the sparking or contact members and the port through which the electrodes are introduced into the combustion chamber; Fig. 4 is a perspective, showing the packing face of the body or frame.

B is a body or frame, carrying the various parts; F is a machined face between which and a similar face on the combustion chamber packing is placed to secure an air tight joint; 3 is a round lug secured to B, preferably made integral with it, and extending laterally from the face F, forms an extension of the bearing *n*, for the movable electrode M, which is shouldered at *f*, a seat face on extremity of lug 3; *m* is an arm integral with the electrode M, disposed at right angles thereto and carrying a contact member, or point, 2, which is arranged suitably to make contact with a similar contact member on the head 1 of the stationary, insulated electrode, or bolt, S.

8 is a round counterbore, extending from face F into the body B and terminates in a seat face 9; 14 is a round perforation through the body B, coaxial with the counterbore 8; 7 is a sleeve inserted into the counterbore 8, seating on seat 9 thereof, and extending laterally from the face F. The perforation in this sleeve 7 is coaxial with the perforation 14 and preferably of same size, so as to readily receive a bushing 6, which should be made of some non-combustible insulating material.

Insulating washers 5, are placed at each end of the insulating tube 6, thus affording complete insulation of the bolt S from the body B.

u is a nut by means of which the bolt S, the sleeve 7, tube 6, and washers 5, are all secured together and to the frame B; 10 is a metal washer protecting the washer 5, beneath it, from the nut *u*; the nut *l* is for securing the circuit wire to S.

The sleeve 7 may be secured into frame by threading it into the counterbore 8. However, the construction shown is obviously the least expensive, in manufacture. By using some non-combustible packing, such as asbestos, between the seat 9 and the sleeve 7, the seat faces on these need not be ground in to secure an air tight joint thereat.

The sleeve *b* is loosely mounted on M and is provided with a striker arm H, which normally engages a projection *h* of a sleeve *c*, this latter being pinned fast to electrode M by pin *d*; the torsion spring 11, coiled around sleeve *b*, has one of its ends engaged on pin *p* and the other on the striker arm H, the spring acting to normally hold said striker arm H bearing on the pin *p*, which pin serves as a stop for the striker arm H; the torsion spring 12, coiled around sleeve *c*, has one of its ends engaged on the striker arm H and the other end on a pin *d*, the spring acting to normally hold the projection *h*, of sleeve *c*, in contact with the striker arm H. The movable electrode M is pinned to the sleeve *c* in such relation that the contact points 2 are separated about one-sixteenth of an inch when the striker arm H and the sleeve *c* are in normal position, that is, arm H bearing against pin *p* and the projection *h* in contact with arm H.

The trip rod, or bar, T is so connected to some moving part of the engine that a reciprocating movement is imparted to it, in operation, at such period that the lip *t*, of this trip rod T, will actuate the striker arm H so that the contact points are brought together and then separated at the proper period for ignition. It will be apparent that as the trip rod T is moved to the right, Fig. 2, the lip *t* will engage the striker arm H, moving it to the right, turning the sleeve *b* clockwise; the movable electrode M, re-

siliently connected to the arm H, will be rotated clockwise until the two contact points 2 come together, then, as the arm H is moved farther, this arm H will be disengaged from the projection *h* of the sleeve *c* which is pinned fast to the electrode M. When the arm H has been moved to some such position as shown by the dotted lines, the lip *t* will trip off, or disengage the arm H, when this will be impelled back by the two springs 11 and 12, and strike a hammer-like blow to the projection *h*, thus making a practically instantaneous break in the current that may be flowing through the contact points 2, the spark resulting from this quick break being a most efficient one for igniting the combustible charges compressed in the combustion chamber of a gas engine.

It is well known that in the manufacture of igniter mechanism, of the class herein described, much difficulty is experienced in machining the frame or body so as to secure efficient packing surfaces, seat surfaces for the movable electrode, etc., it being necessary, in the constructions now in use, to resort to numerous and expensive machining operations to obtain good results. This is especially true in such cases where the port through which these parts of the body, or frame, carrying the electrodes, and the electrodes themselves are introduced into the combustion chamber, must be made small, because of the small combustion chamber necessary to obtain the proper compression in small engines and further the high compression necessary in all sizes of engines when alcohol is to be employed as the fuel. The igniter mechanism can, in such cases, be made smaller in size, but then its component parts become too small to be durable, are easily broken, hence expensive in maintenance, and expensive to make. By employing my construction, it is possible to utilize electrodes, and hence other parts as well, of a substantial size, and yet have the port through which the electrodes are inserted into the combustion chamber of relatively small size.

As will be apparent, the body B can be properly machined at very low cost by employing a chucking turret lathe, provided with a suitable chuck which will grasp the body, in the rough, so that the center line for bearing *n* coincides with center line of the lathe spindle; suitable tools are carried in the turret and in the cross slides to face the packing face F; the seat face *f*, to turn the lug 3, to bore and ream the bearing *n*, and to slightly groove or serrate the face F, all these operations in one setting. The remaining operations are simple and cheap.

I prefer not to thread the sleeve 7 into the body B, but to hold it in by the electrode, or bolt, S, as shown in Fig. 1, and using asbestos packing between the sleeve and the seat 9; this not only makes an air tight joint, at low cost, but also affords a flexible or resilient joint upon which the expansion and contraction of the electrode due to heating and cooling, is taken up, instead of being taken up upon the washers which are preferably of mica; the life of these washers is much prolonged and the efficiency is much increased by this, as they are kept tight at all times, whether the igniter is hot or cold. It is not necessary to insulate the sleeve 7, though this can be done.

I have described and shown the preferred form of the construction in my invention.

I claim:

1. In sparking mechanism for gas engines, the combination of a frame having a packing face and a lug extending laterally from said face and terminating in a seat face, a cylindrical perforation through the lug and the frame and substantially at right angles to the packing face, a shouldered rock shaft in said perforation, a counterbore in the frame at a distance from the lug and extending inwardly from the packing face, a second perforation through the frame co-axial with and of smaller diameter than the counterbore, a cylindrical sleeve inserted into the counterbore and extending beyond the packing face and having its perforation of substantially same size as and co-axial with the said second perforation, an insulating sleeve extending through the perforation of said sleeve and through said second perforation, insulating washers at either end of the insulating sleeve, a bolt passing through said washers and the insulating sleeve and rigidly clamping said washers and said sleeves to the frame, a contact member on the end of the bolt extending from the cylindrical sleeve, an arm secured to the end of the rock shaft extending from the seat face, and a second contact member secured to said arm and adapted to make contact with the first said contact member.

2. In sparking mechanism for gas engines, the combination of a frame having a packing face and a lug extending laterally from the packing face and terminating in a seat face, a cylindrical perforation through the lug and the frame, a counterbore at a distance from the lug and extending from the packing face into the frame, a second perforation through the frame co-axial with and of smaller size than the counterbore, a sleeve extending into the counterbore and relatively longer than the depth of the counterbore, a bolt passing through the sleeve and said co-axial perforation and insulatably secured to the body, a movable shouldered shaft in said cylindrical perforation, the shoulder of the shaft seating on the seat face on the lug, and an arm secured to the

ouldered end of the shaft extending lat-
lly therefrom and adapted to make con-
t with the head of said bolt.

3. In sparking mechanism for gas en-
es, the combination of a frame having a
king face; a lug integral with said
me and extending laterally from and be-
d the packing face and terminating in a
face, a perforation through the lug and
ugh the frame, a shouldered shaft pass-
through said perforation and extending
ond the frame, the shoulder seating on
seat face, a sleeve provided with an arm
loosely mounted on said shaft; a stop
ed to the frame and adapted to engage
arm of said sleeve; a spring connected
id arm and the frame and adapted to
ally hold said arm against said stop; a
ection secured to said shaft and adapted
ngage with said arm, a second spring
ted to normally hold the projection in
gement with said arm, means for actu-
g said arm, a second perforation
ugh the frame at a distance from first
perforation, a counterbore extending
said packing face into the frame and
xial with and of larger diameter than
second perforation, a cylindrical
e within and longer than the depth of the counterbore, a bolt passing through said sleeve and said second perforation and insulatably secured to the frame, and an arm rigidly secured to the shouldered end of said shaft and adapted to make contact with that end of the bolt projecting beyond said sleeve.

4. In sparking mechanism for gas engines, the combination of a frame having a packing face, a lug integral with the frame and extending laterally from said face and terminating in a seat face, a cylindrical perforation through the lug and the frame and at right angles to the seat face, a counterbore at a distance from the lug and extending from the packing face into the frame, a second perforation through the frame coaxial with and of relatively smaller size than the counterbore, and a perforated bushing extending and fitting into the counterbore and projecting beyond the packing face.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY J. PODLEŠÁK.

Witnesses:
CARRIE E. JORDAN,
JENNIE L. FISKE.

s of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

J. L. MILTON.

INDUCTOR GENERATOR FOR IGNITION PURPOSES.

APPLICATION FILED JUNE 17, 1907.

1,051,373. Patented Jan. 21, 1913

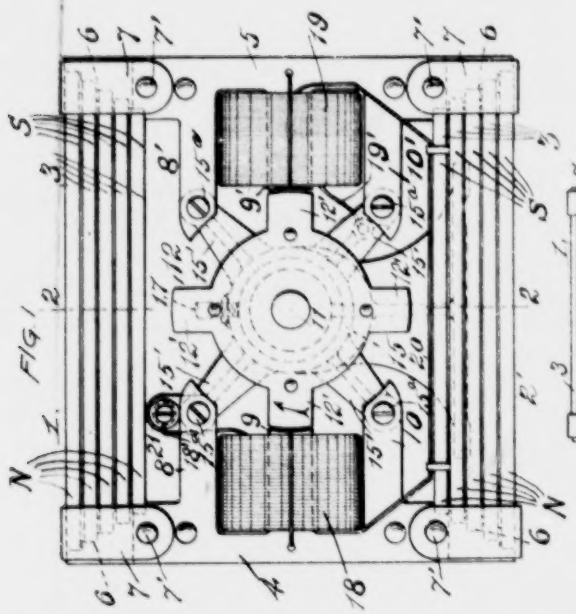


FIG. 1

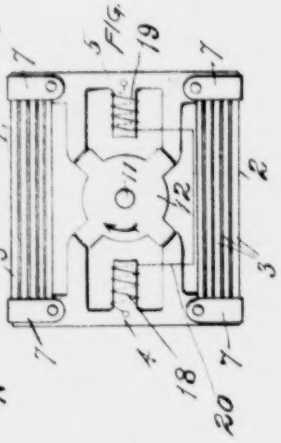


FIG. 4

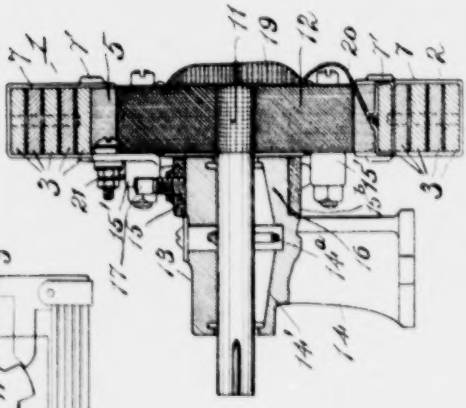


FIG. 2.

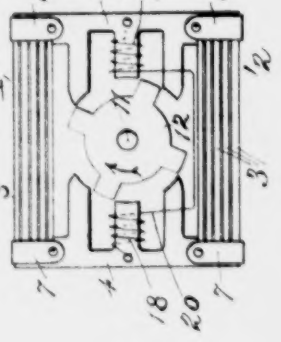


FIG. 3

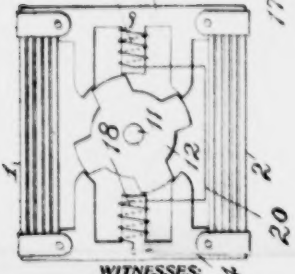


FIG. 5

WITNESSES:

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BY

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ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN L. MILTON, OF CHICAGO, ILLINOIS

INDUCTOR-GENERATOR FOR IGNITION PURPOSES.

1,051,373. Specification of Letters Patent. Patented Jan. 21, 1913.

Application filed June 17, 1907. Serial No. 379,485.

To all whom it may concern:

Be it known that I, JOHN L. MILTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inductor-Generators for Ignition Purposes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in inductor generators for ignition purposes. It is an improvement upon the apparatus for similar purposes set forth and described in my application Serial No. 357,041, filed February 12, 1907, for inductor generators.

Figure 1 is a front face view of an inductor generator embodying my improvements. Fig. 2 is a section on the line 2—2, Fig. 1. Fig. 3 is a diagrammatic view showing the inductor in another position than that shown in Fig. 1. Fig. 4 is a diagrammatic view showing the inductor in still another position. Fig. 5 is a diagrammatic view illustrating a modified type of inductor.

In the drawings 1, 2, indicate permanent field magnets, preferably arranged parallel to each other. These permanent field magnets may be of any suitable construction. I prefer, for the purpose of economy of cost and simplicity of construction, to make up each field magnet of a plurality or group of permanent straight bar magnets 3.

4, 5, represent pole pieces one interposed between the positive poles of said permanent magnets, and the other interposed between the negative poles of the permanent magnets. Preferably these pole pieces are made up of laminæ of metal of high magnetic permeability and susceptibility, and form with the permanent magnets a substantially rectangular frame. For this purpose I have provided the same simple arrangement and correlation of the ends of the permanent magnets and the ends of the pole pieces, shown and described in my application for Letters Patent hereinbefore referred to, namely, the straight bar magnets forming each group of magnets increase in length from the innermost one outward, and are so arranged as to form a series of steps 6 at either end of each permanent field magnet. The end of each pole piece is stepped to correspond with the end of the permanent magnet adjacent to it.

7 are U-shaped clips, each fitted over the end of a permanent field magnet and the end of a pole piece adjacent thereto, and secured to the pole piece in any suitable manner, as for example by a rivet 7'.

Each pole piece carries three inwardly turned polar projections, those on the pole piece 4 being indicated by 8, 9, and 10, respectively, and those on the pole piece 5 by 8', 9', and 10', respectively. Preferably, the laminæ of which each pole piece is built up are suitably stamped out to form the polar projections carried by the pole pieces.

11 is an inductor shaft. 12 is an inductor suitably secured to said shaft and arranged to rotate between the polar projections on the opposite pole pieces. This inductor is preferably made up of laminæ of metal of high magnetic permeability and shaped to form four radial extensions or projections 12' arranged 90 degrees apart about the axis of the shaft 12, in the form of a Maltese cross.

The polar faces of the polar projections carried by the pole pieces are each curved to the arc of a circle common to all, struck from the axis of the shaft 11 as a center, and the coöperating surfaces of the projections 12' on the inductor are correspondingly curved and arranged to operate as closely adjacent to the polar faces of the polar projections as mechanical conditions will permit.

The inductor shaft 11 may be supported in any suitable manner. For the purpose of illustration I have shown it mounted in a bearing 13 carried by a suitable bearing standard 14.

14' is a lubricant chamber in the standard 14, and 14^a is an oil ring surrounding the inductor shaft in said lubricant chamber.

15 is a supporting plate of non-magnetic material for the field magnet frame. It has four radially extending arms 15' arranged 90 degrees apart, and each one suitably secured at its outer end, as indicated at 15^a, to the end of the adjacent polar projection. 15^b is a hollow collar or bearing on said supporting plate snugly fitted to a boss 16 on the bearing standard 14 and angularly adjustable thereabout.

17 is a set screw carried by the collar 15^b and having its inner end arranged to engage the boss 16 to hold the plate 15 and field magnet frame in any desired position

of angular adjustment relative to the axis of the shaft 11.

18 is a coil of insulated wire surrounding the polar projection 9, which is the middle polar projection of the three carried by the pole piece 4. 19 is a coil of insulated wire surrounding the polar projection 9′, the middle one of the three carried by the pole piece 5. These induction coils may be electrically connected together in any suitable manner. In the drawings, I have shown a conductor 20 connecting them in series.

21 is a binding post carried by one of the arms 15′ of the support 15. The free end 18′ of the coil of wire 18 is connected with this binding post. The free end 19′ of the coil 19 may be connected with one terminal of the ignition system for an internal combustion motor in any suitable manner. The free end 18′ of the coil 18 may be suitably connected to the other terminal of the said ignition system.

The magnetic fields set up by the two permanent field magnets oppose each other, the direction of the lines of force for each field magnet across the gap between the pole pieces 4, 5, being always the same. When the inductor 12 is in the position shown in Fig. 1, a substantial magnetic short circuit for the permanent magnets is established by the inductor across the diametrically opposite wire wound polar projections 9, 9′, and the magnetic flux density through the induction coils 18, 19, is at its maximum. As the inductor is rotated in the direction indicated by the arrows in the figures, the magnetic flux density through the induction coils is more or less gradually diminished, in accordance with the speed of rotation of said inductor, until the diametrically opposite arms or projections 12′, 12′, each of which has been moving closely adjacent to one of the polar faces on the wire wound polar projections 9, 9′, leave the said polar projections and air gaps are established between the said wire wound polar projections and the inductor; then the magnetic flux density through the said induction coils is suddenly and rapidly diminished, this diminution of magnetic flux density being emphasized and accelerated by the inductor establishing substantial magnetic short circuits for the permanent magnets outside of said induction coils, namely, across the polar projections 8, 8′, on one side of, and across the polar projections 10, 10′, on the other side of said wire wound polar projections.

The inductor 12 and the polar faces on the polar projections carried by the pole pieces 4 and 5 are so shaped and correlated, that the inductor at all times establishes paths substantially equal in magnetic reluctance for both groups of permanent magnets at either side of it, as shown in Fig. 4.

In order to obtain a high peak to electromotive force curve generated by apparatus herein shown, I have found desirable to so correlate the polar surfaces of the polar projections and the coöperating extensions on the inductor, that at the instant the diametrically opposite pair of extensions on the inductor leave the polar faces of the wire wound polar projections air gaps are established between all of the polar projections on both pole pieces and the inductor, and that immediately thereafter the inductor establishes the substantial magnetic short circuits above referred to outside the wire wound polar projections. To accomplish this result, in the device herein shown and described, I have made the width of the radial projections 12′ carried by the inductor less than the distance between the most closely adjacent points at either end of the polar face of each wire wound polar projection, and the polar face of the polar projection carried by the same pole piece adjacent to it, as shown in Fig. 3.

It will be noted that the polar projections and inductor are so correlated that the results obtained will be the same when the inductor is turned in either direction, clockwise, or anti-clockwise, so that the apparatus may be readily accommodated to a reversible motor. Furthermore, with this construction, the inductor may be oscillated, if desired, rather than rotated.

In Fig. 5 I have illustrated a modified type of inductor over that hereinbefore described, in that the radial extensions on this modified inductor are of sufficient width to close the magnetic circuit across the unwound polar projections before they leave the wire wound polar projections and establish air gaps between the latter and the inductor.

What I claim is:—

1. In an inductor-alternator, the combination of a magnetic field-structure, provided with a pair of oppositely disposed pole-pieces, three polar projections carried by each pole-piece, a winding on the middle polar projection of each pole-piece, the two polar projections at either side of the wound projection being unwound, and an inductor substantially in the shape of a Maltese cross, arranged to move in proximity to said polar projections to vary the distribution of the magnetic flux therethrough.

2. In an inductor-alternator, the combination of a magnetic field-structure provided with a pair of oppositely disposed pole-pieces, three polar projections carried by each pole piece, the polar faces of said projections being arranged in the arc of a common circle, a winding on the middle polar projection of each pole-piece, the two polar projections at either side of the wound projection being unwound, and an inductor hav-

ing four arms movable in proximity to said polar faces to vary the distribution of the magnetic flux therethrough, the width of said arms at their outer ends being less than the distance between adjacent polar faces.

3. In an inductor-alternator, the combination of a pair of oppositely disposed permanent bar-magnets, pole-pieces for connecting the poles of like polarity, three polar projections carried by each pole-piece, a winding on the middle polar projection of each pole-piece, the two polar projections at either side of the wound projection being unwound, and an inductor substantially in the shape of a Maltese cross arranged to vary the distribution of the magnetic flux through said polar projections, said inductor in one position establishing a substantial magnetic short-circuit across said wound polar projections, and in another position establishing a substantial magnetic short-circuit across said unwound polar projections.

4. In an inductor-alternator, the combination of a magnetic field-structure provided with a pair of oppositely disposed pole pieces, three polar projections carried by each pole piece, a winding on the middle polar projection of each pole-piece, the two polar projections at either side of the wound projection being unwound, a plate of non-magnetic material suitably connected to said unwound polar projections for supporting the field-magnet structure, and an inductor arranged to move in proximity to said polar projections to vary the distribution of the magnetic flux therethrough, said inductor in one position establishing a substantial magnetic short-circuit across said wound polar projections, and in another position establishing a substantial magnetic short-circuit across said unwound polar projections.

5. In an inductor-alternator, the combination of two oppositely disposed groups of permanent bar-magnets, pole-pieces for connecting the poles of like polarity, said pole-pieces being each recessed at either end to receive the adjacent end of one of the magnets, and a plurality of U-shaped clips arranged to straddle each one end of a pole-piece and the group of magnets in contact therewith, and means for suitably securing said clips to the pole pieces.

6. In an inductor-alternator, the combination of a pair of oppositely disposed permanent field-magnets, pole-pieces for connecting the poles of like polarity, three polar projections carried by one of said pole-pieces, a winding on the middle polar projection, the two polar projections at either side of the wound projection being unwound, and an inductor arranged to move in proximity to said polar projections to vary the distribution of the magnetic flux therethrough, said inductor in one position establishing a substantial magnetic short-circuit through said winding, and in another position establishing a substantial magnetic short-circuit across said unwound polar projections.

7. In an inductor-alternator, the combination of a magnetic field-structure provided with a pair of oppositely disposed pole-pieces, three polar projections carried by each pole-piece, windings on the middle polar projections, the other of said polar projections being unwound, and an inductor arranged to move in proximity to said polar projections to vary the distribution of the magnetic flux therethrough, said inductor in one position establishing a substantial magnetic short-circuit simultaneously through both windings, and in another position establishing a substantial magnetic short-circuit simultaneously through all four unwound polar projections.

8. In an inductor-alternator, the combination of a pair of oppositely disposed permanent field-magnets, pole-pieces for connecting the poles of like polarity, three polar projections carried by each pole-piece, windings on two of said polar projections, the other of said polar projections being unwound, and an inductor arranged to move in proximity to said polar projections to vary the distribution of the magnetic flux therethrough, said inductor in one position establishing a substantial magnetic short-circuit simultaneously through both windings, and in another position establishing a substantial magnetic short-circuit simultaneously through all four unwound polar projections.

9. In an inductor-alternator, the combination of a magnetic field-structure provided with a pair of oppositely disposed pole-pieces, three polar projections carried by each pole-piece, windings on some of said polar projections, the other of said polar projections being unwound, and an inductor having four radial arms movable in proximity to said polar projections, said arms serving in one position to establish a substantial magnetic short-circuit through said windings, and in another position to establish a substantial magnetic short-circuit across said unwound polar projections.

10. In an inductor-alternator, the combination of a magnetic field-structure provided with a pair of oppositely disposed pole pieces, three polar projections carried by each pole piece, an inductor having four radial arms movable in proximity to said polar projections, said arms serving in one position to establish a substantially magnetic short-circuit through four of said polar projections, and in another position to establish a substantially magnetic short-circuit through the two middle polar projections, and windings so arranged on said

polar projections that the magnetic variations therethrough occur simultaneously as the inductor is rotated.

11. In an inductor-alternator, the combination of a pair of oppositely disposed permanent straight-bar magnets, pole pieces connecting the poles of like polarity, three polar projections carried by each of said pole pieces, an inductor having four radial arms movable in proximity to said polar projections, said arms serving in one position to establish a substantially magnetic short-circuit through four of said polar projections, and in another position to establish a substantially magnetic short-circuit through the two middle polar projections, and windings so arranged on said polar projections that the magnetic variations therethrough occur simultaneously as the inductor is rotated.

12. In an inductor alternator, the combination of a pair of oppositely disposed permanent straight-bar magnets, pole pieces arranged between said magnets at right angles thereto for connecting the poles of like polarity and forming with said magnets a substantially rectangular frame, said pole pieces and magnets lying in a single radial plane, three polar projections carried by each of said pole pieces, a winding on each middle polar projection, the two polar projections on each side of the wound polar projections being unwound, and an inductor having a plurality of radial arms arranged to move in proximity to said polar projections to vary the magnetic flux therethrough, said inductor in one position establishing a magnetic short-circuit through said wound polar projections and in another position establishing a magnetic short-circuit through said unwound polar projections.

In testimony whereof I affix my signature, in presence of two witnesses.

JNO. L. MILTON.

Witnesses:
T. K. WEBSTER,
HENRY J. PODLESAK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

APPARATUS FOR GENERATING ALTERNATING CURRENTS.

APPLICATION FILED JAN. 30, 1909.

1,053,107.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 1.

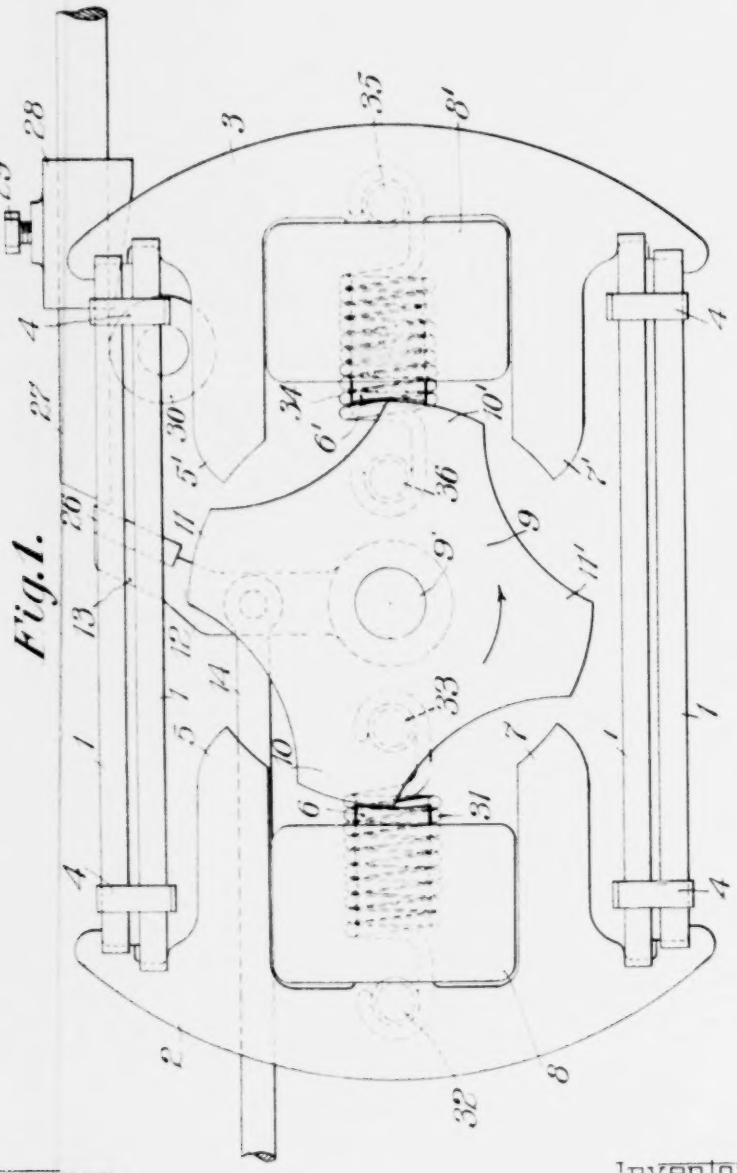


Fig. 1.

Witnesses
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APPARATUS FOR GENERATING ALTERNATING CURRENTS.

APPLICATION FILED JAN. 30, 1909

1,053,107.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 2

Fig. 2.

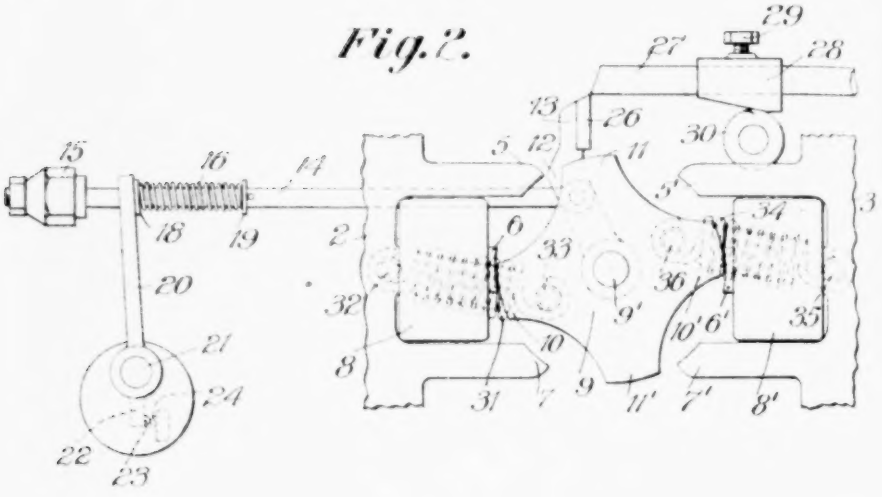
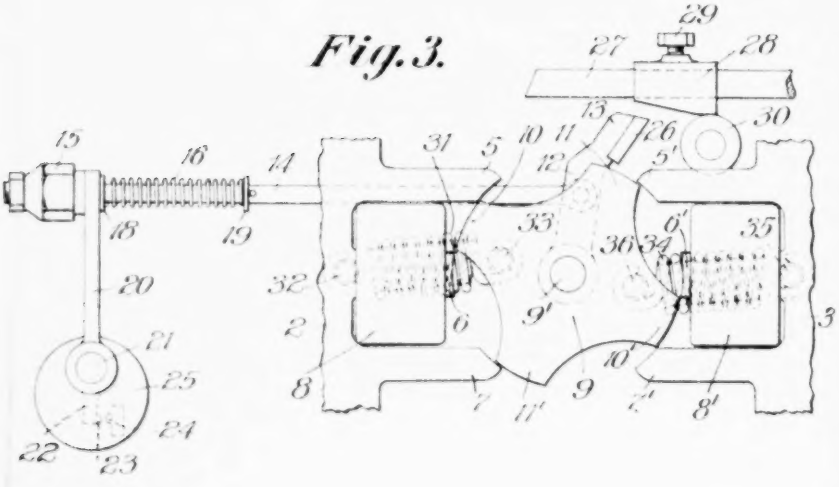


Fig. 3.



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Inventor
John L. Milton
By Brown & Williamson
Attorneys

UNITED STATES PATENT OFFICE.

JOHN LEWIS MILTON, OF CHICAGO, ILLINOIS.

APPARATUS FOR GENERATING ALTERNATING CURRENTS.

1,053,107. Specification of Letters Patent. Patented Feb. 11, 1913.

Application filed January 30, 1909. Serial No. 475,171.

To all whom it may concern:

Be it known that I, JOHN L. MILTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Apparatus for Generating Alternating Currents, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a method of generating alternating currents, and an apparatus adapted to carry my method into operation.

The particular object of my invention is to provide a method and means for producing alternating currents in connection with the operation of gas engines. That is to say, the alternating currents are used for sparking purposes to ignite the combustible mixtures.

In order to facilitate an understanding of my method of generating alternating currents, I shall first describe a form of apparatus which I have devised for carrying out the various steps involved in my new method,—the understanding being, of course, that the particular form of apparatus shown is for the sake of illustration upon the scope of my invention as embodied in my novel method of generating alternating currents.

Referring to the drawings, Figure 1 is a front view of one form of inductor-alternator suitable for carrying out my method, the inductor being shown in its normal or initial position; Fig. 2 is a similar view of the same structure, the inductor being shown in the position in which it appears at the moment of release; Fig. 3 is a similar view of the same structure showing the position which the inductor assumes upon release under the influence of the springs.

The permanent magnets 1, shown in the drawings as straight-bar magnets, are at their ends secured to the ends of pole pieces 2 and 3. To facilitate connection between the magnets and the pole pieces, the ends of the magnets may be fork-shaped, so as to embrace snugly the end portions of the pole pieces, as indicated in Fig. 1. Bands 4 may be used for clamping the magnets together. It will be understood, of course, that the pole piece 2 connects poles of like polarity together,—say, for instance, the north poles of the magnets—while the pole piece 3 connects the other like poles together, as for instance, the south poles.

The pole piece 2 is provided with three polar projections 5, 6 and 7, while the pole piece 3 is provided with corresponding polar projections 5′, 6′ and 7′. The polar projections 6 and 6′ carry windings 8 and 8′, respectively, while the other four polar projections are unwound. Mounted to move in proximity to the polar projections is the inductor 9 secured to a suitable supporting shaft 9′. In the instance illustrated, the shape of the inductor is that of a Maltese cross, having diametrically opposite arms 10, 10′ and 11, 11′. Firmly seated on the shaft 9′ is the arm 12, provided with a projection 13. Pivoted to this arm is a rod 14, which, as shown in Figs. 2 and 3, carries at its outer end a head 15. A compression spring 16 is situated between the collars 18 and 19 on the rod 14. The collar 19 is fixed on the rod, while the collar 18 is slidable thereon. The rod 14 works through an aperture in the contact arm 20, which is pivotally mounted on a shaft or stud 21. The arm 20 has an extension 22, which carries the movable contact 23, the latter cooperating with the fixed contact 24 on the support 25. Removably secured to the projection 13 on the arm 12 is a piece of hard metal, such as steel, 26, which is adapted to be engaged by the end of the reciprocating rod 27. This rod is connected with the crank shaft of the engine in any suitable way, and is provided with a cam piece 28. By means of the set screw 29 the position of this cam piece on the rod 27 may be adjusted. A roller 30 is disposed in the path of the cam member 28, whereby the latter will ride over the surface of the roller in order to break connection at the proper moment between the arm 12 and the rod 27, as will be presently described. An expansion spring 31 is at one end secured to the pole piece 2 at 32 and at its other end secured to the inductor 9 at 33. Similarly, the expansion spring 34 is at one end secured to the pole piece 3 at 35 and at its other end secured to the inductor 9 at 36. The connections between the pole pieces and the inductor by means of the springs are such that the initial or normal position of the inductor will be that indicated in Fig. 1. That is to say, the arms 10 and 10′ are in proximity to the wound

tions 6 and 6′, respectively, but are out of alinement therewith, whereby a substantial short circuit of the magnetic flux through the windings is prevented. It will be observed that this direct connection of the springs to the polar pieces and the inductor is a very simple and effective one, and I consider it one of the novel features of the form of inductor-alternator herein shown.

From the above description of the device herein set forth, the various steps comprising my new method of generating high tension currents will now be readily understood, and I shall therefore proceed with an explanation of my method. As above stated, the rod 27 is suitably connected with the crank shaft of the engine so that during the operation of the engine the rod 27 will be moved to the left into contact with the engaging piece 26 on the arm 12. With the parts in their normal or initial position, as shown in Fig. 1, the reciprocating rod 27 will be moved to the left until after a certain interval it will be in the position shown in Fig. 2, from which it is seen that the cam member 28 has ridden over the roller 30 and raised the rod 27 until the forward end thereof is just about to break engagement with the contact piece 26 of the arm 12. Upon comparison of the position of the inductor as shown in Fig. 1 with its position as shown in Fig. 2, it will be seen that in being moved into what might be termed its operative position against the action of the springs 31 and 34, the inductor first caused a substantial magnetic short circuit through the windings 8 and 8′ at the moment when the arms 10 and 10′ were in alinement with the polar projections 6 and 6′, respectively; then, the inductor being forced out of such alinement, partially interrupted such magnetic short circuit, thus decreasing the number of magnetic lines through the windings 8 and 8′, until it finally reached the position shown in Fig. 2. Now when the inductor has reached this position, it is released by the breaking of engagement between the rod 27 and the arm 12, whereupon the springs 31 and 34 assert themselves and quickly move the inductor into the position in which it is shown in Fig. 3. Comparing the position of the inductor as shown in Fig. 2 with its final position as shown in Fig. 3, it will be noticed that during its travel under the action of the springs the inductor first caused a magnetic short circuit through the windings 8 and 8′ at the moment when the arms 10 and 10′ were in alinement with the polar projections 6 and 6′, respectively, and then immediately the inductor assumed its final position as shown in Fig. 3, in which position, it will be seen, the magnetic short circuit through the windings is at the moment of interruption.

With regard to the action of the compression spring 16 on the rod 14 it will be observed that when the arm 12 is forced to the left from the position in which it is shown in Fig. 1 to that in which it is shown in Fig. 2, the spring 16 will be compressed, thus holding the arm 20 toward the left, whereby the contacts 23 and 24 will be firmly held together. However, when the engagement between the arm 12 and the rod 27 is broken, and the inductor moved into the position in which it is shown in Fig. 3, the head 15 on the rod 14 will come into violent contact with the upper end of the arm 20, forcing the latter quickly to the right, whereby the contacts 23 and 24 are separated, as shown in Fig. 3. This separation of the contacts, which causes an opening of the circuit in which the windings 8 and 8′ are included, takes place substantially at the moment when the magnetic short circuit is broken; that is to say, when the inductor is in the position in which it is shown in Fig. 3. As is well understood, the breaking of the iron path for the flux when the inductor has reached the position in which it is shown in Fig. 3 generates a current of high electromotive force, which surging through the ignition circuit leaps across the sparking terminals to ignite the combustible mixtures in the cylinders of the gas engine. The inductor will, of course, not retain the position in which it is shown in Fig. 3 for the reason that that position is due to the moment of inertia of the inductor and the moving parts connected therewith, whereby the sudden action of the springs carries the inductor beyond its normal position. The extreme position of the inductor, as shown in Fig. 3, is more or less only momentary and it will immediately assume its normal position, as shown in Fig. 1, under the influence of the springs. I wish to call particular attention to the position of the inductor as it is shown in Fig. 2.

I discovered in experimenting with a machine constructed substantially as herein described that if the inductor be quickly carried, as is the case when it is operated by an engine at full speed from its initial position, as shown in Fig. 1, into a position in which the arms 10 and 10′ are in alinement with the polar projections 6 and 6′ and then released, the result was a very feeble spark. Upon investigation I found that by using a very strong pair of springs the spark would be increased, when the inductor was operated by the engine at full speed, and that by using a weaker pair of springs the spark would, under the same circumstances, not be perceptible. But if the inductor was slowly brought to the above-mentioned position in which the arms 10 and 10′ are in alinement with polar projections 6 and 6′, or if it was brought quickly into this position and then allowed to rest for a moment

and then released, the return of the inductor under the influence of the springs would result in a very powerful spark. However, these conditions of operation do not obtain in the practical use of a gas engine, especially on automobiles where the speed of the engine varies between low speed and full speed, and where there would be no period of rest for the engine, such as is mentioned in the preceding sentence. However, even with the use of weak springs upon carrying the inductor beyond the position in which it causes a substantial magnetic short circuit into a position such as that shown in Fig. 2, where the short circuit is at least partially interrupted, and then releasing the inductor, the result was the production of a very powerful spark, at all speeds of operation of the engine. Now, as I comprehend it, the difference in the result obtained by operating the machine in the several ways as just described is due to the fact that in the first instance the electromotive force generated during the backward movement of the inductor had to spend itself largely in overcoming or neutralizing the high self-induced electromotive force which was set up when the inductor (operated by the engine at full speed) quickly caused a substantial magnetic short-circuit through the windings 8 and 8′, so that the effective electromotive force was considerably small as compared with the generated electromotive force. However, by carrying the inductor beyond a position of alinement with the polar projections 6 and 6′ into a position such as shown in Fig. 2, in which the magnetic short circuit has been partially and sufficiently interrupted, there is generated an electromotive force which opposes or cuts down the high self-induced electromotive force set up at the moment of the magnetic short circuit. The result of this cutting down or partial neutralization of that high self-induced electromotive force is that upon again establishing the magnetic circuit and immediately interrupting it, the electromotive force generated at the moment of interruption might be said to encounter a clear field,—that is to say, it does not have to weaken itself in opposing or killing off a high counter-electromotive force surging through the windings. As will be seen, this method of operation permits the use of very weak springs, which are highly desirable for mechanical reasons.

It will thus be seen upon an examination of the different positions in which the inductor is shown in Figs. 1, 2 and 3 during the operation of the device that the method which I have invented for generating high induction currents consists first in increasing the number of magnetic lines through the windings, as by causing a substantial magnetic short-circuit through the windings, then decreasing the number of magnetic lines through the windings in order to generate a self-induced electromotive force that will kill off the self-induced electromotive force which was set up by the current generated at the moment of the magnetic short-circuit, momentarily stopping the magnetic changes here before reversal, and then suddenly increasing and decreasing in quick succession the number of magnetic lines through the windings, the result of these various steps being the generation of a high tension current sufficient to produce sparks of considerable magnitude.

Of course it is understood, as I have already indicated, that the form of apparatus herein described is only illustrative of apparatus that may be employed to carry my method into operation, and that so far as the method is concerned other forms and modifications may be devised to carry my invention into effect.

As concerns the construction of the particular embodiment of inductor-alternator herein set forth, I do not wish to be confined to any of the details thereof any more than is described in the appended claims. It should be clear, for instance, that my novel arrangement of the springs and their connections with the moving and stationary parts of the inductor-alternator may be employed with various other forms of field structure and inductors, and still fall within the scope of my invention as defined in certain of the claims.

In my copending application, Serial No. 443,608, filed July 15, 1908, I claim matter which is disclosed but not claimed in this application, to wit, the generally circular contour of the field magnet structure with respect to the axis of the rotor.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. An inductor-alternator comprising, in combination, a magnetic field-frame provided with oppositely disposed pole-pieces, each of said pole-pieces having three polar projections, windings on the middle projections, an inductor mounted to move between said polar projections and provided with four radial arms to vary the magnetic flux through said windings, spring-means secured to said inductor and said field-frame for normally holding the inducter in a predetermined position relative to said polar projections, and means for periodically moving said inductor out of its normal position against the action of said spring-means, whereby said inductor will upon release move in the reverse direction under the action of said spring-means.

2. An inductor-alternator comprising, in combination, a magnetic field-frame provided with oppositely disposed pole-pieces, each of said pole-pieces having three polar

projections, windings on the middle projections, an inductor mounted to move between said polar projections and provided with four radial arms to vary the magnetic flux through said windings, a pair of oppositely disposed springs secured each at one end to said inductor and at its other end to said field-frame for normally holding the inductor in a predetermined position relative to said polar projections, and means for periodically moving said inductor out of its normal position against the action of said springs, whereby said inductor will upon release move in the reverse direction under the action of said springs.

3. An inductor-alternator comprising, in combination, a magnetic field-frame provided with a pair of polar projections having windings thereon, a movable inductor having a pair of radial arms to co-act with said polar projections for varying the magnetic flux through said windings, spring-connections between said inductor and said field-frame for normally holding the inductor-arms in proximity to said polar projections but out of alinement therewith, and means for periodically moving said inductor-arms into alinement with said projections and beyond such position, whereby said inductor will upon release move in the reverse direction under the action of said spring-connection to generate a sparking-current.

4. An inductor-alternator comprising, in combination, a magnetic field-frame provided with a pair of diametrically opposite polar projections having windings thereon, a movable inductor having a pair of oppositely extending arms to coact with said polar projections for varying the magnetic flux through said windings, a pair of oppositely disposed spring-connections between said inductor and said field-frame for normally holding the inductor-arms in proximity to said polar projections but out of alinement therewith, and means for periodically moving said inductor-arms into alinement with said projections and beyond such position, whereby said inductor will upon release move in the reverse direction under the action of said spring-connections to generate a sparking-current.

5. An inductor-alternator comprising, in combination, a magnetic field-frame provided with oppositely disposed pole-pieces each of said pole-pieces having three polar projections, windings on the middle projections, an inductor mounted to move between said polar projections and provided with four radial arms to vary the magnetic flux through said windings, spring-connections between said inductor and said field-frame for normally holding the inductor in a position such that a pair of diametrically opposite arms will be in proximity to said middle polar projections but out of alinement therewith, and means for periodically moving said inductor out of its normal position, so that said pair of arms will first come into alinement with said middle polar projections and then pass beyond such position, whereby said inductor will upon release move in a reverse direction and generate a sparking-current.

In witness whereof, I hereunto subscribe my name this 22nd day of January, A. D. 1909.

JOHN LEWIS MILTON.

Witnesses:
LEONARD W. NOVANDER,
A. A. THOMAS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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INDUCTOR GENERATOR FOR IGNITION PURPOSES.

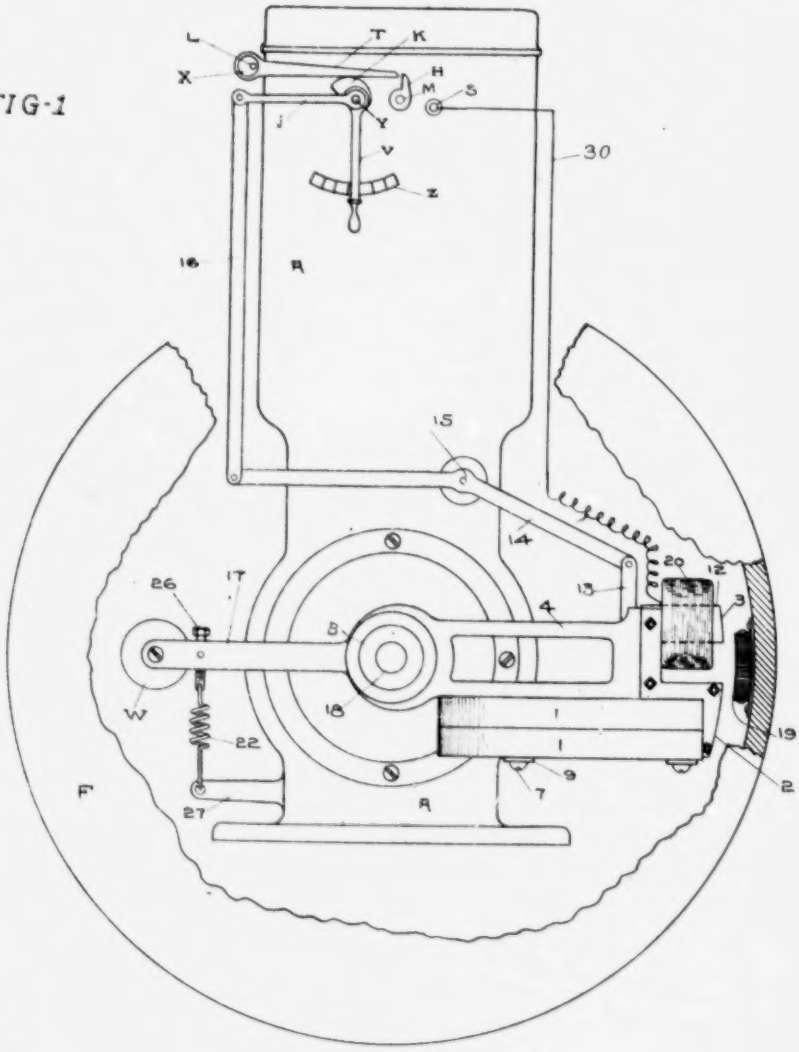
APPLICATION FILED SEPT. 25, 1901.

1,056,360.

Patented Mar. 18, 1913.

3 SHEETS—SHEET 1.

FIG-1



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3 SHEETS-SHEET 2

FIG.-2

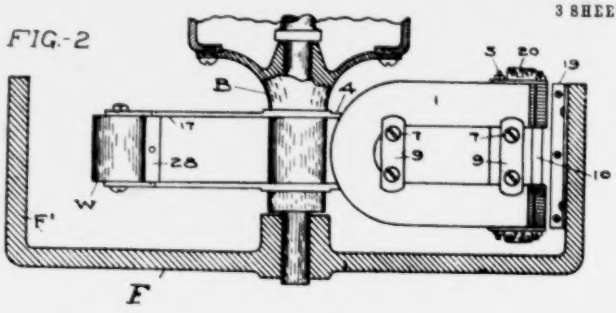


FIG.-3

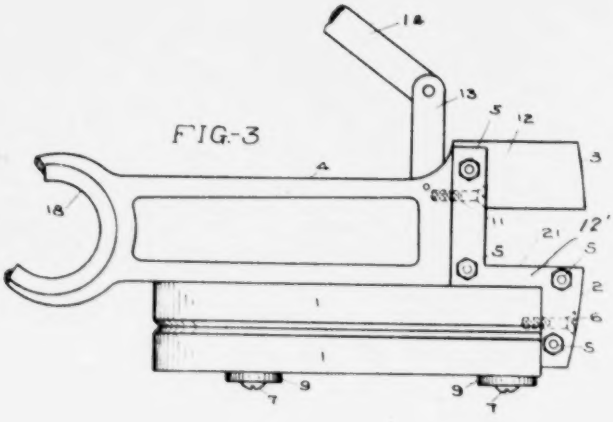
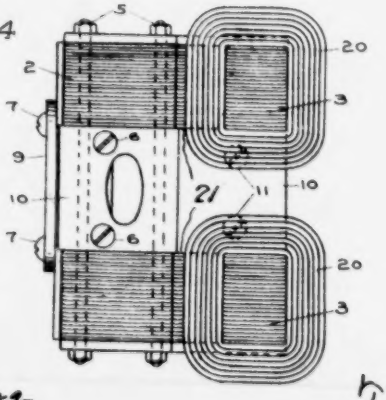


FIG.-4



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APPLICATION FILED SEPT. 25, 1901.

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3 SHEETS-SHEET 3.

FIG. 5.

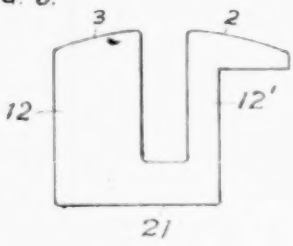


FIG. 7.

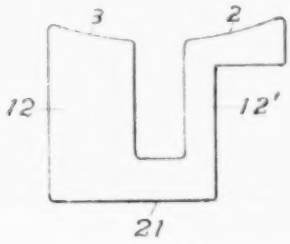


FIG. 8.

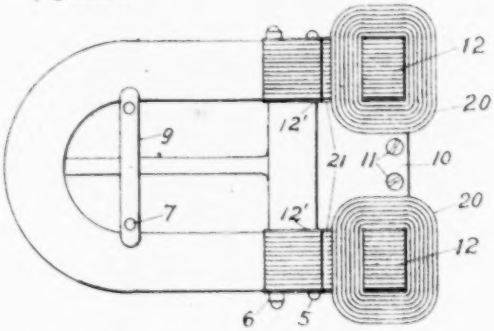


FIG. 6.

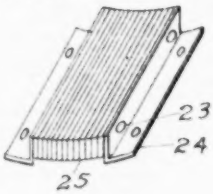
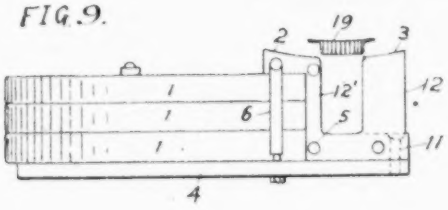


FIG. 9.



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INDUCTOR-GENERATOR FOR IGNITION PURPOSES

1,056,360. Specification of Letters Patent. Patented Mar. 18, 1913.

Application filed September 25, 1901. Serial No. 76,559.

To all whom it may concern:

Be it known that we, TESLA EMIL PODLESAK and HENRY JOSEPH PODLEŠÁK, citizens of the United States, and residents, respectively, of Brooklyn, county of Kings, and State of New York, and Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Inductor-Generators for Ignition Purposes, of which the following is a clear and concise specification, reference being had to the several drawings, which are a part thereof.

This invention relates to inductor alternators for ignition purposes.

It essentially pertains to inductor alternators capable of producing electrical effects suitable for the ignition of combustible charges in internal combustion motors.

One object of our invention is to so arrange and correlate the permanent field magnets to the other elements of an inductor alternator, that in operation the permanent magnets will be kept magnetized and built up.

Another object of our invention is to provide an inductor alternator which is readily adaptable to all classes of internal combustion motors, such as automobile, marine, and stationary motors, and to the special requirements of each class, and is readily adjustable for varying the period of generation of maximum electro-motive force relative to the position of a piston within an engine cylinder.

Figure 1 is a side elevation of a motor fitted with an inductor alternator embodying our invention, the fly wheel of the motor being shown partly broken away and partly in section. Fig. 2 is a plan view of the inductor alternator as mounted on the crankshaft bearing of the motor shown in Fig. 1, the flange wheel being shown in section and the crankshaft bearing partly in section. Fig. 3 is a side elevation of the normally stationary part of the inductor alternator, detached, the induction windings being removed. Fig. 4 is an end view of parts shown in Fig. 3, the induction windings being shown in place. Fig. 5 is a side elevation of one of the sheet metal punchings or sections of which the pole pieces of the inductor alternator shown in Figs. 1, 2, 3, and 4 are composed. Fig. 6 is a perspective view of an inductor, detached, suitable for the above form of inductor alternator. Fig. 7 is a side elevation of a sheet metal punching or section for pole pieces of a modified form. Fig. 8 is a plan view of a modified form of inductor alternator embodying our invention. Fig. 9 is a side elevation of Fig. 8, the induction windings being removed and the inductor shown in place.

In the drawings—A represents an internal combustion motor of any well known construction. B indicates the crank shaft bearings at either side of said motor, the crank shaft itself being represented by 18.

F is the fly wheel of the motor having an inwardly extending flange F'.

1 indicates a permanent magnet preferably horseshoe or U-shaped in form. It is composed of as many magnet sections, arranged in a series, as may be required to establish the desired density of magnetic field.

4 is a frame, preferably of non-magnetic material, and employed to position and support in proper relation to each other the normally stationary parts of our inductor alternator. In the drawings, this supporting and positioning frame is mounted upon a crank shaft-bearing B at one side of the motor, and is capable of adjustment about the axis of the said crank shaft.

9 are clamp pieces or cleats arranged to bear against the outermost magnet section in the series, and 7 are bolts or screws extending through said cleats and into the frame 4, and adapted to clamp or bind the said frame and permanent magnet together.

21 are pole pieces composed of a suitable number of punchings or laminæ shown in Fig. 5. A pair of these pole pieces is preferably used, assembled, one at either side of a suitable center piece or spacing piece 10 of non-magnetic material, and suitably bolted thereto by means of bolts 5. This non-magnetic spacing piece 10 is suitably secured to the frame 4 by means of bolts or screws 11, so as to hold the laminated pole pieces 21 in close magnetic contact with the ends or poles of the permanent magnet sections.

Each one of the pole pieces has a pair of polar projections 12, 12', the former of which serves as a coil core upon which a winding or coil 20 of insulated wire is

slipped, and to which the said coil is suitably secured. The coil core 12 on each pole piece is spaced by a suitable air gap from the adjacent polar projection 12′ on said pole piece. The outer faces or polar faces of the said polar projections 12, 12′, are suitably shaped to conform to the path of travel of a suitable inductor, hereinafter described. The polar faces on the polar projections 12′ are designated by 2, and hereinafter referred to as exciting polar faces, and the polar faces on the polar projections 12 are designated by 3, and hereinafter referred to as generating polar faces.

19 is an inductor, preferably formed of punchings or laminæ of suitable metal. This inductor is adapted to be rotated so as to have one of its faces pass over and closely adjacent to the exciting polar faces 2 and the generating polar faces 3, by mere mechanical clearance, or, in other words, as close to said polar faces as mechanical conditions will permit. We have shown the said inductor 19 as secured to and carried by the flange F′ of the fly wheel F of the motor. The polar faces 2, 3, and the face of the inductor which passes adjacent to them are shaped to the arc of a circle struck from the axis of the crank shaft as a center.

Normally the lines of magnetic force emanate in a scattered way, from all sides of the magnet for about one-half of its length from its free ends, and some of these lines of force emanate from the pole pieces. The inductor 19, in operation, first spans the exciting polar faces 2 and causes the concentration of a dense flow of magnetic lines of force, a substantial magnetic short circuit, between the polar projections 12′ of the laminated pole pieces. The inductor then moves across the air gap between the exciting polar faces and the generating polar faces and causes a rapid and substantially complete diversion of the magnetic flux density, first concentrated across the exciting polar faces, into and through the coil cores 12 and across the generating polar faces, so as to establish a substantial magnetic short circuit across the generating polar faces. The inductor then leaves the generating polar faces, and the magnetic flux density through the induction windings is rapidly diminished, due to the fact that the lines of magnetic force instantly seek the path of least reluctance between the magnet poles.

With an inductor alternator constructed in accordance with our invention, the inductor does not at any time move sufficiently closely to the limbs of the magnets themselves to draw or concentrate a dense magnetic flux across the limbs of the magnets above the poles thereof, but on the contrary, we have so constructed and arranged the elements of an inductor alternator for ignition purposes, that the inductor in its operation tends only to draw or concentrate the magnetic flux emanating from the magnet poles at the free ends of said magnet, thereby tending to prevent the shifting of the said poles and to overcome the tendency of the said poles to shift, with consequent loss of magneto-motive force by the magnets. The electro-motive force is generated in the inductive windings 20, as in all dynamo-electric generators, by varying the magnetic flux density in the said windings. The inductor 19 operates to cause a very rapid varying of the magnetic flux density by first establishing a substantial magnetic short circuit, *i. e.*, by concentrating the magnetic flux at a point adjacent to but outside of the induction windings, so that the magnetic flux density in the cores of said windings is practically zero, then quickly diverting the magnetic flux through the coil cores, and then, practically instantly, permitting the magnetic flux density in said coil cores to again drop to substantially zero.

With multi-cylinder motors, two or more inductors are used, there being one inductor for each cylinder, as will readily be understood, unless the periods of ignition of two or more of said cylinders occur at the same period of the stroke at alternate revolutions. In any case, an inductor must be provided and so arranged that it will pass over and span the generating polar faces when the ignition of a combustible charge is required. Also, when the motor is arranged for two or more ignitions, usually termed "late", "early", etc., it may prove desirable to use one inductor for each of such ignitions, and to mount and hold stationary the permanent magnet and induction windings.

In Figs. 1 and 2, the frame 4 of the inductor alternator is shown pivoted or journaled on the bearing B of the crank shaft at one side of the motor, as hereinbefore mentioned, in order that it may be oscillated through a part of a revolution to vary the instant of generation of maximum electro-motive force, so as to accommodate the generator for operation with mechanism for varying the period of ignition within the engine cylinder.

13 is a link connected at its lower end with the generator frame, and having its upper end suitably connected to one end of a lever 14 which is pivoted at 15 to the frame of the motor. The mechanism for advancing or retarding the time of ignition within the engine cylinder may be of any suitable and well known type. For the purpose of illustrating our invention, we have shown in the drawings, more or less diagrammatically such a mechanism.

K is a cam connected to move with a crank lever V, said lever being pivoted

Y to the cylinder of the motor, and adapted to be oscillated and retained in any desired position of adjustment by the engagement of its downwardly extending arm with one of the teeth of a rack section Z.

16 is a link connected at its lower end to the upper end of the lever 14, and having its upper end connected to the outer end of the arm *j* of the bell crank lever V.

The make and break mechanism within the cylinder may be of any well known and suitable construction. We have diagrammatically illustrated it as consisting of an insulated stationary electrode S and a movable electrode M, the latter having on the outside of the cylinder a laterally projecting arm H. Springs or their equivalents for controlling the operation of the electrode M in the well known manner, are, for the sake of clearness, not shown. The movable electrode M is actuated by a reciprocable trip rod T, which has one end mounted on an eccentric X carried by a shaft L, driven from some suitable member of the motor. The driving connection for the shaft L, for the sake of clearness, has not been shown. The free end of the trip rod T rests upon the cam K, and is guided by it. By adjusting the said cam, the trip rod T is caused to bring about the separation of the electrodes within the cylinder relatively sooner or later in the stroke of the piston. The connections between the said bell crank lever V and the frame 4 are so proportioned and correlated that, as the period of ignition in the cylinder is changed by the operation of the bell crank lever to either advance or retard the spark, the electric generator is also shifted or adjusted into a position to generate the requisite electro-motive force at the moment of the electrodes of the make and break apparatus in the cylinder separate to produce the desired spark.

W is a weight secured between the arms 17 extending from the frame 4, the said weight being suitable to counterbalance the weight carried at the opposite end of the said frame 4. 22 is a spring having its lower end attached to a bracket 27 carried by the motor frame, and its upper end secured to an adjusting screw 26 which extends through a cross bar 28 carried by the arm 17. This spring serves to supplement the weight W and affords an additional means for facilitating the adjustment of the electric generator.

The induction windings 20 on the coil cores 12 are composed of convolutions of insulated wire wound continuously in each coil. The coils are wound on forms, and preferably impregnated with some insulating varnish or compound that is impervious to oil and water. They are suitably covered for protection and arranged to slip over the coil cores to which they are secured.

The winding on the coil core of each pole piece may be in one or more separate coils, all of which are suitably and properly connected together, either in parallel or in series, as may be desired. The terminals of the induction windings are suitably connected to the electrodes of the igniter. As shown in Fig. 1, the stationary insulated electrode S is connected to one of the terminals of the induction windings by a conductor 30, the other terminal of the windings being suitably grounded and thus connected to the movable electrode M, which is grounded as is usual.

In Figs. 8 and 9 is shown another form of the inductor alternator in which the polar faces of the pole pieces are curved oppositely, with respect to the magnet sections, to the way the polar faces are curved in the form shown in Figs. 1, 2, 3, and 4. In the form shown in Figs. 8 and 9 the wheel or support for carrying the inductor may, by making the curvature of the polar faces of a short radius, be made of short radius, which is desirable in some cases.

We do not limit ourselves to the precise construction shown and described, as our invention may be embodied in other forms of construction.

What we claim and desire to secure by Letters Patent is:

1. In an inductor generator, the combination of a permanent magnet provided with a pair of laminated pole pieces, one in magnetic contact with each pole of the magnet and extending laterally therefrom, two polar projections on each pole piece each terminating in a polar face, said polar faces constituting a substantially cylindrical polar surface, windings carried by the adjacent polar projections on said pole pieces, and an unwound inductor rotatable about an axis substantially parallel to the polar surface and in proximity to the polar faces to vary the magnetic flux therethrough, said inductor substantially short-circuiting the magnetic flux through the unwound polar projections when it is in one position and through the wound polar projections when it is in another position.

2. In an inductor generator, the combination of a rotatable shaft, an unwound inductor carried by the shaft and having a polar face curved in the arc of a circle struck from the axis of the shaft as a center, a permanent magnet provided with a laterally extending pole piece at each of its poles, a pair of polar projections on each pole piece and each terminating in a polar face, said polar faces constituting a polar surface curved to correspond with the polar face of the inductor, an inductive winding on one polar projection of each pole piece, said inductor substantially short-circuiting the magnetic flux through the unwound polar projections

when it is moved into one position and through the wound polar projections when it is moved into another position.

3. In an inductor generator, the combination of a permanent magnet, a pair of pole pieces arranged in magnetic contact with the poles of said magnet and extending laterally therefrom, each pole piece having a pair of polar projections provided with polar faces, a winding carried by one of the polar projections, and an unwound inductor having a polar surface movable in the proximity to said polar faces and serving to establish a substantially short circuit of the magnetic flux through one set of polar projections and outside of the winding when said inductor is in one position and through the other set of polar projections and through the windings when said inductor is in another position.

4. In an inductor generator, the combination of a permanent magnet, a pair of laminated pole pieces held in magnetic contact with the poles of said magnet and extending laterally therefrom, each pole piece having a pair of polar projections terminating in polar faces, an inductive winding on one polar projection of each pole piece, the other polar projection of each pole piece being unwound, and an unwound inductor movable in proximity to said polar faces to concentrate the magnetic flux alternately through the unwound polar projections and through the wound polar projections.

5. In an inductor generator, the combination of a permanent magnet, two laminated pole pieces held in magnetic contact one with and extending laterally from each pole of the magnet and having each two polar projections terminating in polar faces constituting a cylindrical polar surface, inductive windings on the adjacent polar projections of said pole pieces, the other polar projection on each pole piece being unwound, and an unwound inductor movable about an axis substantially parallel to the polar surface and in proximity to the polar faces to concentrate the magnetic flux alternately through the wound polar projections and through the unwound polar projections.

6. In an inductor generator, the combination of a permanent magnet, a pole piece in magnetic contact with each pole of said magnet and extending laterally therefrom each pole piece being provided with two polar projections terminating in polar faces, a winding in inductive relation to one polar projection on each pole piece, a common means formed of non-magnetic material for supporting both pole pieces, means for holding the pole pieces in magnetic contact with the magnet, and means formed of magnetic material movable in proximity to the polar faces to establish a substantial short circuit of the magnetic flux alternately through the unwound polar projections and through the wound polar projections.

7. In an inductor generator, the combination of a permanent magnet having a pole piece in magnetic contact with and extending laterally from each pole, said pole pieces being provided each with two polar projections terminating in polar faces constituting a cylindrical polar surface, a winding on one of said polar projections, and an inductor movable in proximity to said polar faces to vary the magnetic flux through the wound polar projection.

8. In an inductor generator, the combination of a field magnet having pole pieces extended laterally therefrom and terminating in polar faces constituting a cylindrical polar surface, means for supporting the pole pieces and holding them in magnetic contact with said magnet, windings on said pole pieces, and an inductor movable in proximity to said polar faces to vary the magnetic flux through said winding.

9. In an inductor generator, the combination of a field magnet having pole pieces extended laterally therefrom and terminating in pole faces forming a cylindrical polar surface, means for holding said pole pieces in magnetic contact with the poles of said magnet, a winding on one of said pole pieces, an annular member carried on a shaft substantially parallel to said surface, and an inductor mounted axially upon said annular member to move in proximity to said pole faces for varying the magnetic flux through said winding.

10. In an inductor generator, the combination of a permanent magnet provided with pole pieces in magnetic contact therewith and extended laterally therefrom and terminating in polar faces, an inductive winding on one of said pole pieces, an inductor, and means to carry the inductor in proximity to the polar faces to vary the magnetic flux therethrough.

11. In an inductor generator, the combination of a field magnet having pole pieces in magnetic contact therewith and extended laterally therefrom and terminating in polar faces, means for holding said pole pieces in magnetic contact with the poles of said magnet, an inductive winding on one of said pole pieces, an annular rotatable member surrounding said field magnet, and an inductor mounted on the inside of said annular member with its length parallel to the axis of the latter and arranged to move in proximity to said polar faces to vary the magnetic flux through said winding.

12. In an inductor generator, the combination of a permanent magnet, a polar extension in magnetic contact with one of the poles of the magnet and extending laterally from the magnet and terminating in a polar face, a polar extension in magnetic contact

with the other pole of and extending laterally from the magnet and provided with two polar projections terminating in polar faces, a winding on one of said polar projections, and an unwound inductor movable in proximity to the said polar faces to vary the magnetic flux first through one of said polar projections and then through the other said polar projection.

13. In an inductor generator, the combination of a permanent magnet, a pole piece in magnetic contact with one pole of said magnet and extending laterally from the magnet and provided with a polar face, a pole piece in magnetic contact with the other pole of and extending laterally from said magnet and including a laminated core, having a polar face, a winding on said core, and an inductor movable in proximity to said polar faces to vary the magnetic flux therethrough.

14. In an inductor generator, the combination of a laminated permanent magnet, two laminated pole pieces extending laterally from the magnet, one in magnetic contact with the pole of the magnet and each provided with two polar projections terminating in polar faces constituting a cylindrical polar surface, means of non-magnetic material for supporting the pole pieces and holding them in magnetic contact with the poles of the magnet, an inductive winding on one polar projection of each pole piece, a rotatable shaft whose axis is substantially parallel to said polar surface, and an inductor carried by said shaft and movable in proximity to said polar faces to vary the magnetic flux therethrough, said inductor establishing a substantially magnetic short circuit alternately through the unwound polar projections and through the wound polar projections.

15. In an inductor alternator, the combination of a support, a permanent magnet, pole pieces, a spacing element between the pole pieces, fastenings extending through the pole pieces and element to secure them together, and means for fastening the said element to the support with the pole pieces in contact with the magnet.

16. In an inductor alternator, the combination of a spacing element of non-magnetic material, pole piece laminæ on opposite sides thereof, bolts passing through the laminæ and spacing element for securing the said parts rigidly together as a unitary structure, with a magnet in contact with the pole pieces, and a common support to which the magnet and said structure are independently fastened.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

TESLA E. PODLESAK.
HENRY JOSEPH PODLEŠÁK.

Witnesses to the signature of Tesla E. Podlesak:

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Witnesses to the signature of Henry Joseph Podlešák:

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WILLIAM WEBBER.

J. L. MILTON.

MAGNETO GENERATOR.

APPLICATION FILED OCT. 28, 1910.

1,096,048.

Patented May 12, 1914.

2 SHEETS—SHEET 1.

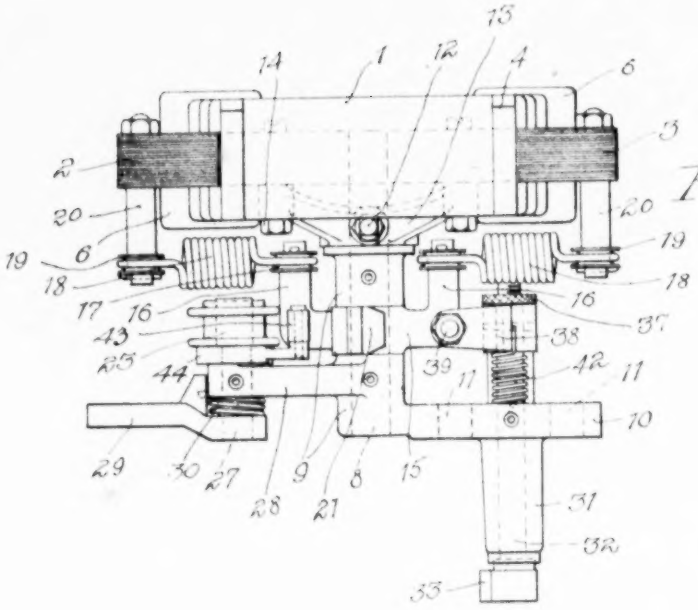
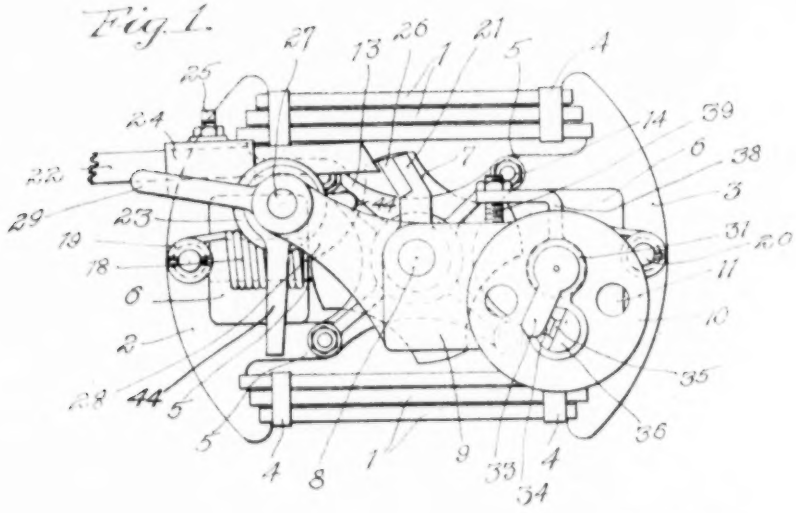


Fig. 2.

Fig. 1.



Witnesses

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MAGNETO GENERATOR.

APPLICATION FILED OCT. 28, 1910

1,096,048.

Patented May 12, 1914

2 SHEETS—SHEET 2

Fig. 4.

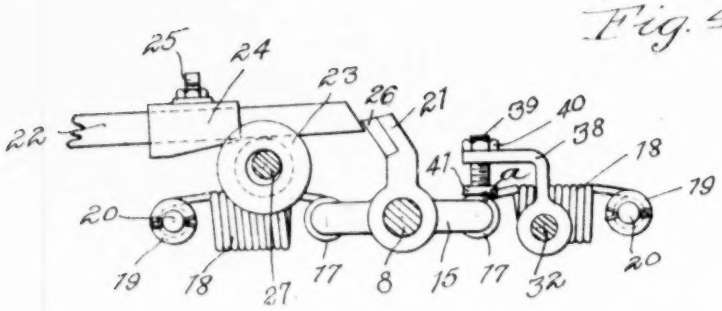
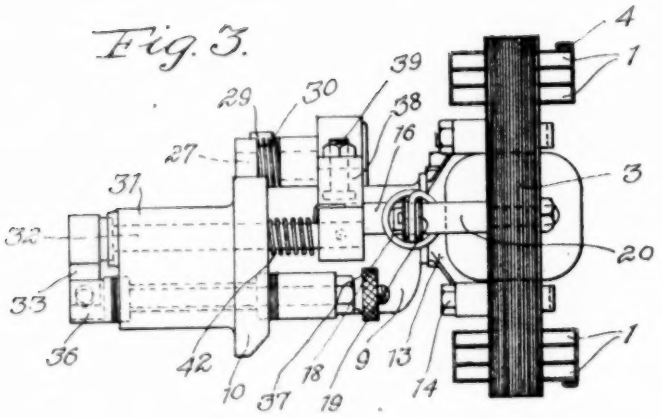


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN LEWIS MILTON, OF TIFFIN, OHIO.

MAGNETO-GENERATOR.

1,096,048. Specification of Letters Patent. Patented May 12, 1914.

Application filed October 28, 1910. Serial No. 589,561.

To all whom it may concern:

Be it known that I, JOHN L. MILTON, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented a certain new and useful Improvement in Magneto-Generators, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to magneto generators and ignition mechanism for use in connection with internal combustion engines.

The object of my present invention is to obtain a cheap and efficient construction while at the same time a construction which will prevent undue hammering of the ignition contacts.

One of the principal features of my invention resides in a malleable iron casting and the parts with which it coöperates in causing the oscillation of the generator inductor and in controlling the movements of the spark contacts. The use of this single malleable iron casting provides a rigid construction and at the same time one which transmits the necessary motion from the engine mechanism to the inductor of the generator, and which also by means of a cam surface carried on one of its arms actuates the contact mechanism to cause a sudden separation of the contacts followed, however, by a slow and easy reëngagement thereof. Since in the construction of my invention these spark contacts are brought slowly and easily together, excessive wear is avoided by the prevention of hammering which would otherwise take place.

My present invention may in a general way be regarded as an improvement upon my co-pending application, Serial No. 475,171, filed January 30, 1909. In that earlier application I disclosed an inductor generator having stationary windings and an oscillating inductor, this inductor being actuated in one direction by power supplied from the engine with which it was associated, there being provided a set of springs for returning the inductor sharply to its normal position and beyond, when the inductor was released.

My present invention also utilizes a set of springs for returning the inductor in a reverse direction whenever it is released by the mechanism which actuates the inductor to carry it into its abnormal position.

My present invention consists also in an arrangement whereby unnecessary hammering of the contacts is avoided, where the reciprocations of the operating rod are more frequent than the ignition periods, this arrangement consisting of mechanism for throwing the inductor out of action except during such time as the spark is required to pass for ignition purposes.

These and the various other features of my invention will be more clearly understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of the generator and its associated parts; Fig. 2 is a plan view thereof; Fig. 3 is an end elevation; Fig. 4 is an isolated elevation of the actuating mechanism.

Like reference characters are applied to the same parts throughout the various figures.

The generator proper comprises the permanent magnets 1, 1, whose consequent poles are secured to the ends of the pole-pieces 2 and 3. The bands 4, 4 clamp the magnets together and hold them in position upon the laminated pole-pieces.

Each of the pole-pieces is provided with three polar projections 5, 5, the middle projection in each instance carrying a winding 6. Rotatably mounted within the embrace of the polar projections is the inductor 7 carried upon the shaft 8. This inductor has generally the shape of a Maltese cross with diametrically opposite arms adapted when in one position to convey the magnetic flux of the permanent magnets through the polar projections on which the windings 6 are laid and when in the alternate position to short-circuit the magnetic flux around these central poles.

The shaft 8, which carries the oscillating inductor is journaled in the bracket 9 which extends from the plate 10, this plate being provided with openings 11, 11, through which bolts pass to secure the plate directly to the cylinder or other combustion chamber of an internal combustion engine. The arms of a brass spider 13 are attached to the polar projections of the field magnet by the bolts 14, 14, the hub of the spider in turn being mounted upon a boss extending from the

bracket member 9, the spider and thus the field magnet being held in fixed position by means of the set screw 12.

An actuating yoke 15 of malleable iron is mounted upon the shaft 8 between the two journals of the bracket member 9, the yoke and the shaft being keyed together preferably by means of a taper pin. The yoke is provided with two arms 16, 16 which extend from diametrically opposite sides of the hub, where they turn and become parallel with the shaft 8 at diametrically opposite positions. At the end of each arm is a grooved roller 17. The free ends of the helical actuating springs 18, 18 are hooked over these rollers, the other ends of the springs being hooked over similarly grooved rollers 19, 19 carried by posts 20, 20 extending from the field pole-pieces 2 and 3. These posts are mounted at diametrically opposite points, wherefore the actuating springs tend always to return the yoke 15 and thus the inductor to their normal position.

A steel faced operating arm 21 extends upwardly from the hub of the yoke 15 where it is adapted for engagement by the end of the reciprocating rod 22 connected and driven in any suitable manner from the shaft of the engine with which the ignition mechanism is associated. A roller 23 carries the free end of the actuating rod 22 except when the lower cam surface of the adjustable sleeve 24 rides up on the roller to disengage the end of the actuating rod from the face of the operating arm 21. The exact time in the cycle of the engine at which this release of the yoke and hence of the inductor takes place may be regulated by adjusting the position of the sleeve 24, the set screw and nut 25 serving to maintain the proper adjustment. The hardened steel face 26 of the operating arm 21 will prevent undue wear at this point.

The roller 23 is eccentrically mounted upon a post 27 which is carried by an arm 28 extending from the bracket 9. A starting lever 29 is keyed to the end of the post 27 whereby the post may be turned in one direction or the other to raise or lower the roller 23 due to its eccentric mounting upon the end of the post. A small spring 30 connected with the starting lever 29 and with the extension 28 tends to hold the starting lever always in the running position. When it is desired to retard the production of the spark at the contact points as in starting the engine, the lever 29 is thrown manually into a position in which the roller 23 is lowered, thereby delaying slightly the disengagement of the end of the actuating rod from the corner of the operating arm 21 and thus delaying also the spark production.

Coming now to the mechanism for controlling the operation of the contacts, a boss 31 will be seen to extend from the bolting plate 10. Through this extends a spindle 32. At the end of the spindle is a swinging contact arm or crank 33 upon which is mounted the platinum or other contact point 34 adapted for operation with the contact point 35, mounted upon the post 36 suitably insulated from the plate 10 and the other parts of the mechanism. The post 36 terminates in a binding screw 37 to which the conductor leading from one end of the field magnet windings is electrically connected. At the other end the contact spindle 32 is provided with an L-shaped arm 38 through which passes the adjusting screw 39 of the anvil 41, the lock nut 40 serving to maintain the adjustment. A very light helical spring 42 surrounds the spindle 32 between the plate 10 and the arm 38 and, being connected at one end with the plate 10 and at the other end with this actuating crank 38, it tends to turn the spindle 32 in a direction which will bring the contact points 34 and 35 into engagement with one another. The drawings show these several parts in their normal positions.

The position of the anvil 41 is such that the upper surface of an arm 16 of the yoke 15 will engage it to cause a separation of the contact points 34 and 35. It will be noted that the arm 16 forms a curved cam surface *a* adapted to engage the lower side of the anvil 41 whereby the overrunning of the inductor and yoke piece 15 upon their release from the actuating rod 22 will cause this cam surface to engage the anvil with a sharp sudden hammer-like blow, thus causing a correspondingly sudden opening of the contact points 34 and 35. The actuating springs 18 promptly return the yoke member 15 to its normal position after the overthrow which follows the release of its operating arm 21 from the pressure of the actuating rod 22. During this return movement the anvil 41 rides smoothly and easily over the curved cam surface of the engaging arm 16 of the yoke 15. The light spring 42 causes the actuating crank 38 to follow the yoke-arm 16 in this return movement, thereby causing the contact points 34 and 35 to be returned slowly and easily to their normal contact positions. The surface of the arm which acts as a cam in conjunction with the anvil 41 is curved as shown in the drawing to avoid the pounding of the contact mechanism. The distance between the anvil 41 and the coöperating cam surface *c* of the yoke arm may be adjusted to cause the contact points 34 and 35 to separate just at the proper point in the current wave production.

An auxiliary roller 43 is mounted upon a bell crank lever 44, this bell crank lever being pivotally mounted on the post 27. The depending arm 44 is adapted to be controlled by the engine governor. Thus when

the speed of the engine exceeds the limit for which the governor is set, the roller 43 is elevated to lift the actuating rod 22 clear of the operating arm 21, thus preventing the oscillation of the inductor and at the same time the actuation of the contacts 34 and 35.

While I have shown and described a preferred embodiment of my invention, it will be apparent to those skilled in the art that many modifications may be made without departing from the spirit thereof.

What I claim as new and desire to secure by Letters Patent is:

1. In combination, a field magnet, an inductor mounted upon a shaft for oscillation relative to the field magnet, a yoke mounted upon the shaft for oscillation with the inductor, an operating arm carried by the yoke, a reciprocating member driven by an internal combustion engine to engage the operating arm to swing the yoke in one direction, means for disengaging the reciprocating member from the operating arm to permit the oscillating parts to return to their normal position, spring mechanism connected with the diametrically opposite arms of the yoke, to return it to the normal position when relieved of the pressure of the reciprocating member, a curved cam surface on one arm of the yoke, a fixed electrical contact and a swinging electrical contact in the combustion chamber of the internal combustion engine, a spindle upon which the swinging contact is mounted, a push finger mounted upon the contact and spindle and carrying an anvil normally disengaged from the cam surface of the yoke but adapted to be engaged by the cam surface upon the overthrow of the oscillating yoke to separate the electrical contacts, and a light spring acting to bring the swinging contact and the push finger into their normal positions.

2. In a device of the class described, a suitable field magnet, an inductor adapted for oscillating with respect to the field magnet, a yoke rigidly connected with the inductor and having projections at diametrically opposite points, main actuating springs connecting the projections of the yoke with suitable stationary projections on the frame, the said actuating springs tending always to return the oscillating members to their normal positions, a pair of electrical contacts in the combustion chamber of an internal combustion engine, a light spring tending to maintain the closure of said electrical contacts, a push finger adapted when struck to separate the electrical contacts against the tension of the light spring, a curved cam surface on the yoke adapted to engage the push finger upon the overthrow of the yoke when returned to its normal position by the main actuating springs, an operating arm associated with the yoke, and reciprocating mechanism driven by the internal combustion engine to engage the operating arm to swing the yoke and the inductor out of their normal position.

3. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation within the field magnet, a pair of main actuating springs, each connected at one end with the field magnet frame, an integral yoke member rigidly connected with the inductor, the main actuating springs being connected at their free ends with the said yoke member, an operating arm constituting a part of the integral yoke member and adapted to be engaged by a reciprocating member driven by an internal combustion engine, separable contact points within the combustion chamber of the internal combustion engine, a light spring tending to maintain the closure of the electrical contacts, and mechanism adapted to be engaged by a cam surface on the yoke member to cause the separation of said contacts in opposition to the tension of the said light spring.

4. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation therein, spring mechanism tending to return the inductor to its normal position when moved out of said normal position, an operating arm for turning the inductor out of its normal position, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod being adapted normally to engage the end of the inductor-operating arm, means for shifting the path of travel of the reciprocating rod to determine its engagement with the operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and a member fixed relative to the inductor adapted to effect the operation of said contacts to create an ignition spark within the combustion chamber of the engine.

5. In a device of the class described, a field magnet, an inductor mounted for oscillation therein, an operating arm for said inductor, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod adapted normally to engage the end of the inductor-operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and an impact member fixed relatively to the inductor adapted to separate said contacts to create a spark in the combustion chamber.

6. In a device of the class described, a field magnet, a shaft, an inductor mounted upon the shaft for oscillation relative to the

field magnet, a yoke mounted upon said shaft for oscillation with said inductor, springs tending to retain the inductor and shaft in normal position, an engine-driven member for oscillating said shaft and parts carried thereby, separable electrical contacts within the combustion cylinder of the engine, and an impact member fixed relative to the inductor and shaft arranged to effect the separation of said contacts to create an ignition spark in the combustion chamber of the engine.

In witness whereof, I hereunto subscribe my name this 26th day of October, A. D. 1910.

JOHN LEWIS MILTON.

Witnesses:
ALEXANDER KISKADDEN,
EUGENIA K. ADAMS.

E. PODLEŠÁK.

MAGNETO MACHINE.

APPLICATION FILED JULY 21, 1911.

1,098,052.

Patented May 26, 1914.

4 SHEETS—SHEET 1.

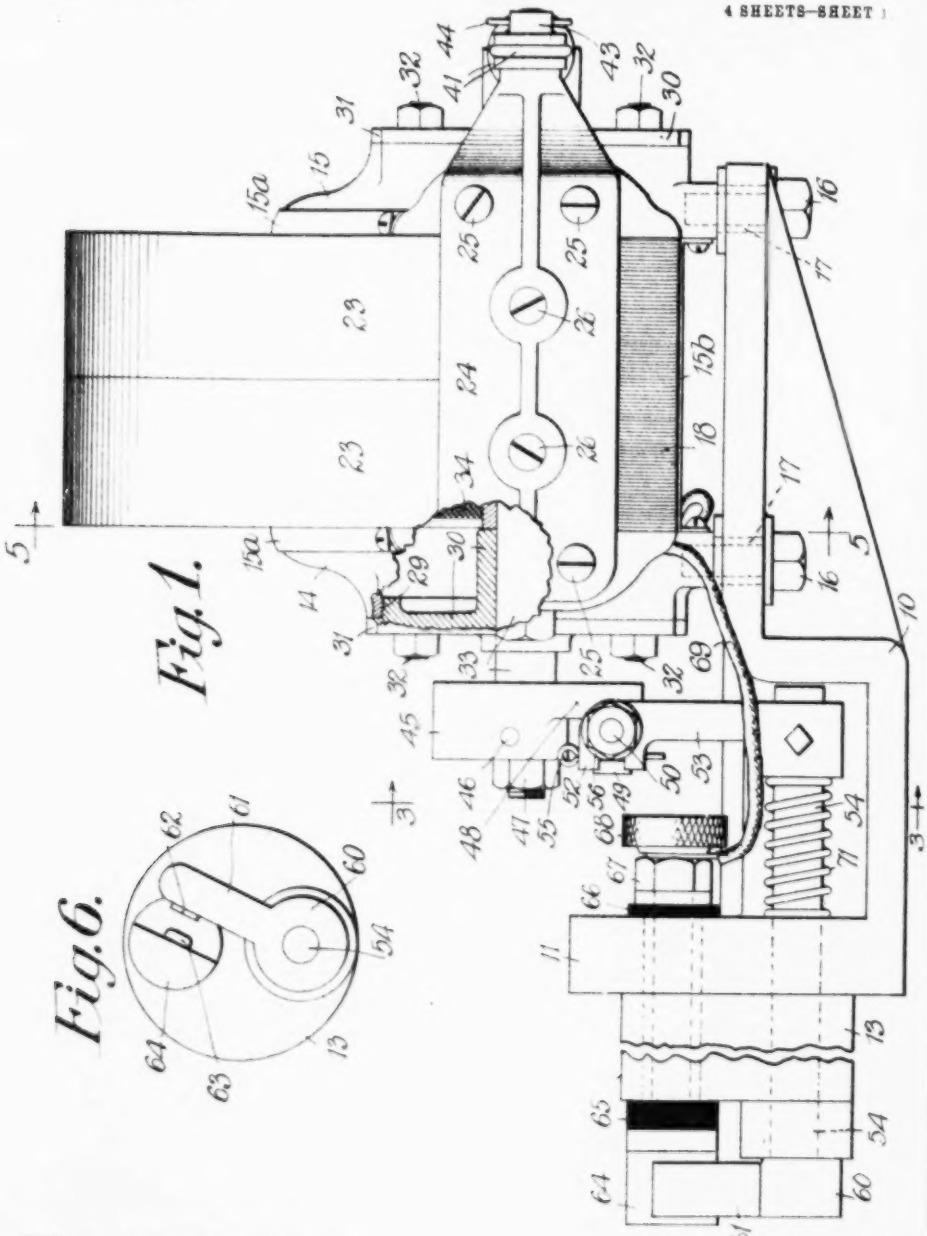


Fig. 1.

Fig. 6.

Witnesses

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MAGNETO MACHINE.

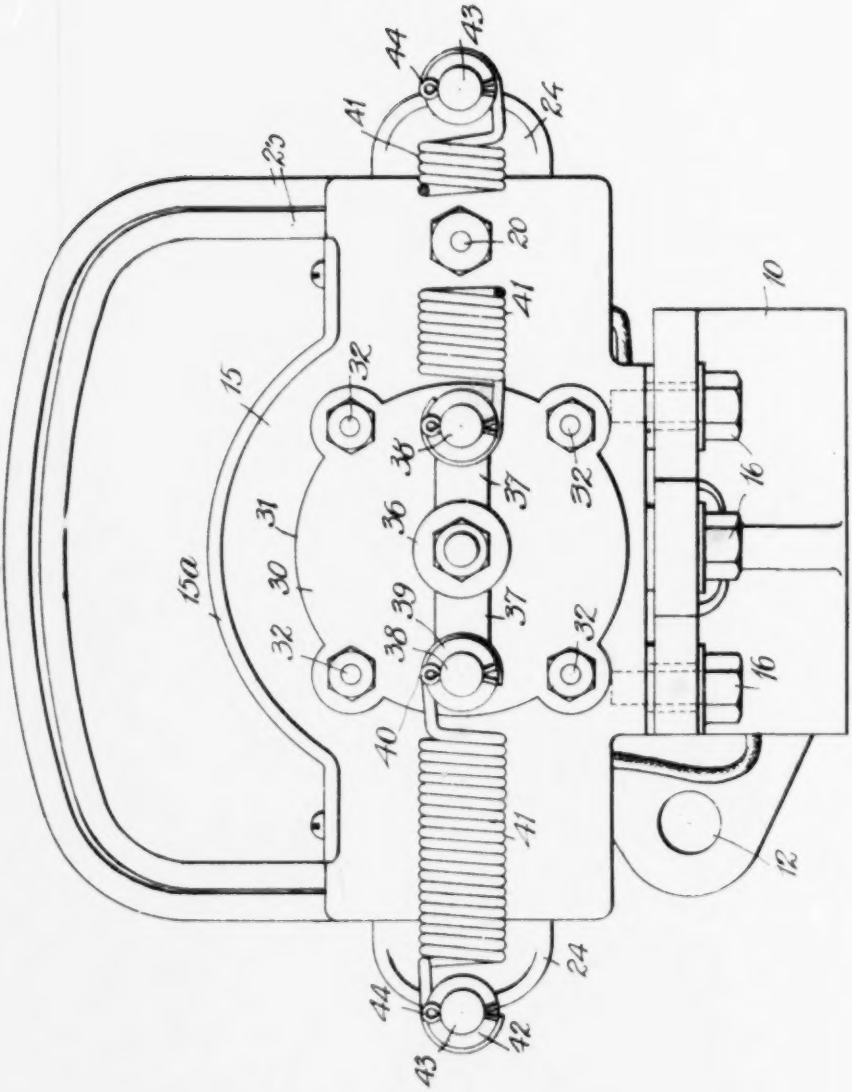
APPLICATION FILED JULY 21, 1911.

1,098,052.

Patented May 26, 1914.

4 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

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APPLICATION FILED JULY 21, 1911.

1.098,052

Patented May 26, 1914.

4 SHEETS—SHEET 3.

Fig. 3.

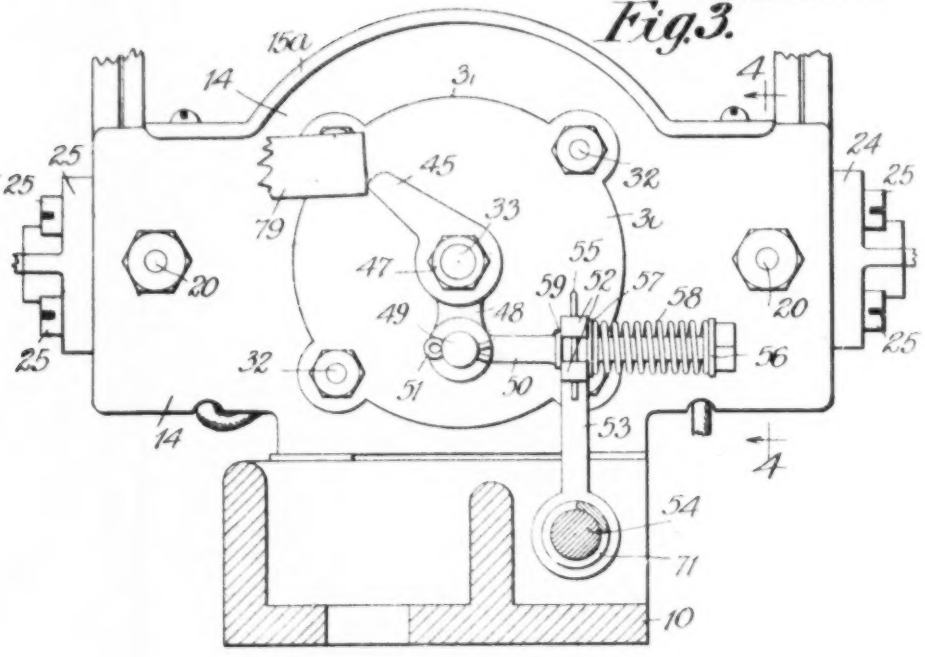
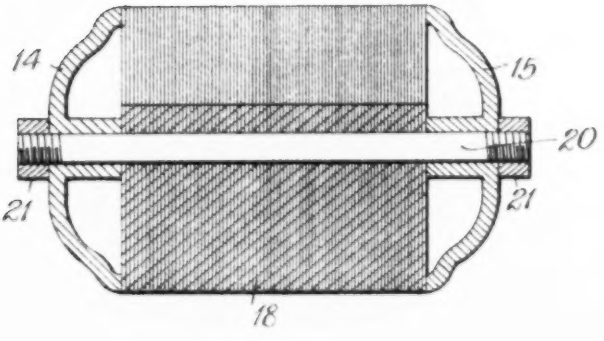


Fig. 4.



Witnesses:

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MAGNETO MACHINE.

APPLICATION FILED JULY 21, 1911.

1,098,052.

Patented May 26, 1914.

4 SHEETS—SHEET 4.

Fig. 7.

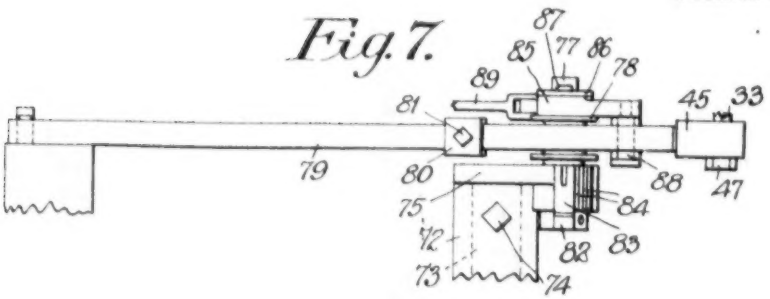


Fig. 5.

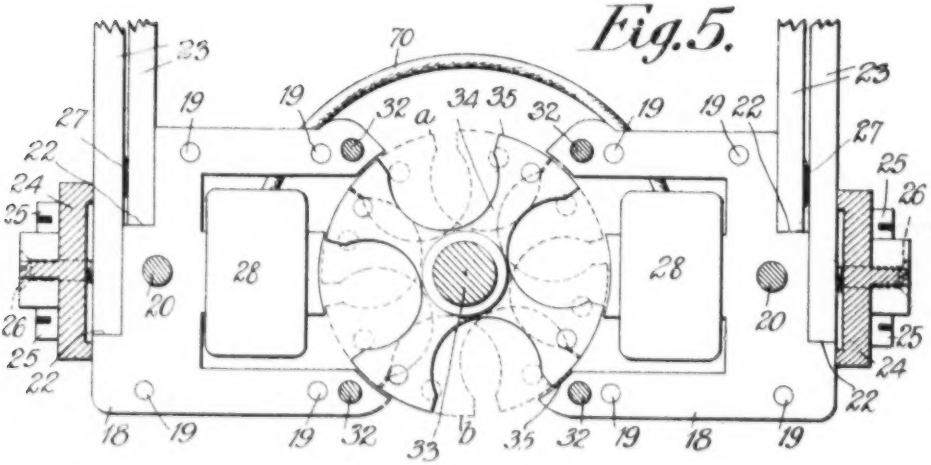


Fig. 9.

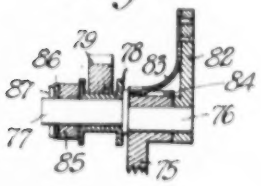
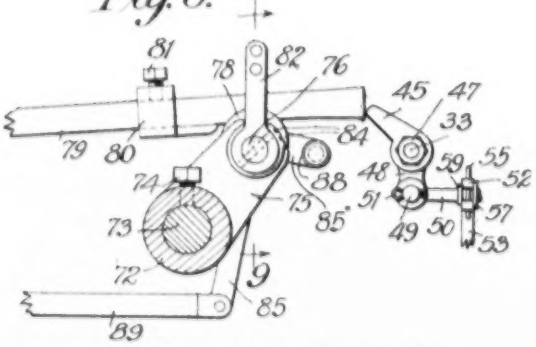


Fig. 8.



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UNITED STATES PATENT OFFICE.

EMIL PODLEŠÁK, OF TIFFIN, OHIO.

MAGNETO-MACHINE.

1,098,052. Specification of Letters Patent. Patented May 26, 1914.

Application filed July 21, 1911. Serial No. 639,738.

all whom it may concern:

Be it known that I, EMIL PODLEŠÁK, a citi- of the United States, residing at Tiffin, the county of Seneca and State of Ohio, ve invented certain new and useful Im- ovements in Magneto-Machines, of which following is a full, clear, concise, and ex- description, reference being had to the ompanying drawings, forming a part of s specification.

My invention relates to magneto machines d it contemplates a generally improved ice. Its object is to produce a magneto chine which will be substantially less ex- sive than devices of the prior art, which l be of more simple and reliable con- ction and which will be more durable more efficient.

To the ends above noted I have invented ous features of construction and ar- gement, new in themselves and influen- ly related, touching not only upon the gneto itself, but also upon the sparking hanism, for association with an internal bustion engine, to which it is peculiarly pted.

pecifically, therefore, my device is a gneto machine for ignition purposes and various features of construction to which ve referred will be found to be consist- with this use. In addition to these va- s features of construction and arrange- , I provide for an entirely new manner peration which could be carried out by hanisms other than those herein specifi- shown. It will be seen, however, that e of the more specific of the appended ms bring out the detailed construction in- ing this operation, which is particularly l and advantageous in this respect.

he various features of my invention are odied in the magneto machine illustrated e accompanying drawings, in which—

gure 1 is a side elevational view there- ig. 2 is an end elevational view thereof; 3 is a partial view taken on the plane of e 3—3 of Fig. 1 and looking in the ion indicated by the arrows; Fig. 4 is ated sectional view taken on the plane line 4—4 of Fig. 3 and looking in the ion indicated by the arrows, Fig. 5 is a l sectional view taken on the plane line 5—5 of Fig. 1 and looking in the ion indicated by the arrows; Fig. 6 is an isolated face view of the spark gap mechanism; Fig. 7 is a plan view of the actuating mechanism; Fig. 8 is a fragmentary elevational view of some of the parts shown in Fig. 7, some parts being shown in section; and Fig. 9 is a sectional view taken on the plane of the line 9—9 of Fig. 8 and looking in the direction indicated by the arrows.

This type of machine is adapted to be bolted directly upon the engine casting. The various parts are carried upon a comparatively heavy supporting frame or shelf 10 which is provided with the upright flange 11 having openings 12 through which cap bolts may be passed into the engine casting. A cylindrical boss 13 extends forwardly from this upright flange and is adapted to fit in a corresponding opening in the engine casting so that the spark gap terminals which are carried thereby and which will be described later may be disposed directly in the engine cylinder.

Two non-magnetic supporting side plates 14, 15, upon which various other parts of the magneto are carried, are bolted to the frame or shelf 10 by means of cap bolts 16, 16 passing through enlarged openings 17, 17 in the frame and into the bottom of the side plates as illustrated in Figs. 1 and 2. The utility of these enlarged openings will appear presently. There are preferably three of these cap bolts and the three supporting points thus determine the supporting plane and a rigid arrangement is secured. Between these supporting side plates, at each end thereof, a laminated pole piece 18 is clamped, these pole pieces comprising laminations riveted together at 19, 19. As shown in Figs. 4 and 5 bolts 20, 20 pass through the pole pieces and through the side plates and at the ends are provided with nuts 21, 21 so as to secure a mechanically resistant arrangement.

The outer end of each pole piece 18 is stepped as indicated at 22, 22 for the reception of permanent horse shoe magnets 23, 23 which thus pass from one pole piece over to the other as shown in Figs. 1 and 2. These horse shoe magnets are held firmly upon the pole pieces by means of the end plates 24, 24 which are secured to the ends of the side plates 14 and 14 by means of bolts 25, 25. As to the magnets, there are two sets of two, the inner magnets resting upon the

upper step 22 and the outer magnets resting upon the lower step 22. Set screws 26, 26, one for each side of each pair of magnets, have threaded engagement with the end plates 24, 24 and are screwed in to abut against the magnets to clamp them firmly in place. Dished springs 27, 27 are interposed between the magnets of each pair, near each end, as illustrated in Fig. 5, in order to transmit the clamping action.

The members 18, 18 are tri-polar and the middle polar extension of each of them is provided with a generating coil 28, 28. Each of the side plates 14 and 15 has a central opening 29, these openings alining upon an axis disposed midway between the pole faces, as will be pointed out presently. In each of the openings 29 a non-magnetic collar 30 is secured, the flange 31 of this clamp being secured to the face of the side plate by means of bolts 32, 32. These bolts, as shown in Fig. 5, extend through the outside polar extensions of the pole pieces in order to assist in clamping the laminations together. The collars 30, 30 form bearings for the rotor shaft 33 upon which the rotor 34, having four faces 35, 35, is secured. The overall periphery of the rotor is cylindrical and this form corresponds with the cylindrical internal faces of the polar projections, all as illustrated in Fig. 5. The faces of the rotor are approximately the same width as the faces of the middle polar projections and are considerably greater in width than the outside polar faces. Furthermore, the rotor faces are broad enough to span the distance between the middle polar faces and the outside polar faces, but not wide enough to span the distance between the outside polar faces on one side and those on the other. A thin brass plate 15ª is secured across the top of the side plates and a thin brass plate 15ᵇ is secured across the bottom of the side plates in order to inclose and protect the rotor.

On the outside, beyond the side plate 15, the rotor shaft 33 has rigidly secured thereto a hub 36 which is provided with the oppositely extending arms 37, 37. Each of these arms is provided at its end with a portion 38 turned outwardly at right angles and provided with a spool 39 slipped thereon and retained in place by means of a cotter pin 40. One end of a coiled spring 41 is wound about each spool 39 and the other end of each spring is wound about a spool 42 mounted upon a stud 43 extending from the corresponding end plate 24, a cotter pin 44 being provided to hold this latter spool in place. The tendency of the springs 41, 41 is to keep the arms 37, 37 in a horizontal position, as shown in Fig. 2, and when they are in this position the rotor is in the position shown in full lines in Fig. 5. Upon the opposite end of the rotor shaft 33, which is slightly reduced, a finger 45, preferably of tool steel, is secured by means of a cross pin 46 and a nut 47. This finger, as will be described later, is adapted to be engaged intermittently by a push rod operating from the engine shaft. This finger is provided with the downward extension 48 which is provided with a small stud 49 to which the end of a small connecting rod 50 is pivotally attached, the rod being held in place by means of a cotter pin 51. This rod extends to the right (Fig. 3) where it passes between the tangs of the bifurcated ends 52 of a swinging lever 53 rigidly secured upon a shaft 54, this shaft being journaled in the boss 13, as indicated in Fig. 1. A cotter pin 55 retains the connecting rod between the parts 52, 52. The connecting rod extends considerably to the right of the lever 53 and at its end is provided with a shoulder or nut 56 between which and the lock washer 57 thereon the coiled spring 58, encircling it, is disposed. It is clear that the expansive nature of this spring will normally tend to hold the washer 57 against the right side of the operating lever 53. The function of this spring will be pointed out later. The connecting rod 50 is provided with a small shoulder 59 on the left of the oscillating lever and the function of this shoulder will be pointed out later when the operation is described.

The shaft 54 extends forwardly beyond the boss 13 and it is there provided with a hub 60 rigidly secured thereto and having an arm 61. This arm carries the contact piece 62 which coöperates with the stationary contact piece 63 carried upon a stud 64 which is effectively insulated from the boss 13 and the flange 11 by means of the insulating parts 65, 65. The stud 64 extends through the boss 13 and the flange 11 and it is there provided with a nut 67 and with a binding screw 68. It is clear that angular movement of the arm 61 will result in the making and breaking of a circuit between the points 62 and 63. The arm 61 is grounded to the machine and the other contact is insulated therefrom. A suitable insulated conductor 69 connects the binding post 68 and one of the coils 28 while the two coils are connected together by means of a conductor 70. The free terminal of the second coil 28 is grounded to the machine and this completes the circuit for low tension ignition.

The arm 61 is so disposed upon the shaft 54 that when the oscillating lever 53 is in its normal position, that is, when the rotor is in the position shown in full lines in Fig. 5, the contacts 62 and 63 are separated as indicated in Fig. 6. The purpose of this arrangement will be pointed out later when the operation is described. The shaft 54 is capable of a slight longitudinal movement conveniently due to the play between the

mechanical connections involved, but it is held at one extreme of its movement by means of a coiled spring 71 which surrounds it between the hub of the lever 53 and the flange 11. When it is desired to clean the contacts 62 and 63 they may be brought into engagement and the shaft 54 moved back and forth to rub them together.

Referring to Figs. 7, 8 and 9, it will be seen that a supporting stud 72 is provided and this stud may extend from any suitable part of the engine frame. This stud is provided with a central bore in which a shaft 73 is held in any adjusted position by means of a set screw 74. This shaft 73 carries an arm 75 which, in turn, carries a rotatable stud 76. This stud has a forward extension 77, the axis of which is parallel to but eccentric from the axis of the stud itself, for a purpose which will be pointed out presently, and upon this extension a roller 78 is disposed. A push rod 79 rides upon the roller 78 and, as broadly indicated in Fig. 7, is mechanically connected in some way with the engine shaft. Thus the push rod 79 is guided to abut against the finger 45, as indicated in Fig. 8, and for each reciprocation thereof it moves the finger over to impart a certain amount of oscillation to the rotor. This action is called "cocking the magneto." The push rod is provided with a cam piece 80, secured in any adjusted position by means of the set screw 81 and this cam piece is arranged to engage the roller at the proper moment to raise the push rod and to release the finger 45 so that the rotor may fly back under the influence of the springs 41, 41. As the rotor returns in this manner the magnetic flux is changed so that current is generated in the windings 28, 28 and this causes a spark to pass between the contacts 62 and 63, as will be pointed out more fully later. It will appear that the time at which the finger 45 is released from the push rod 79 is very important and initial adjustment in this respect is secured by giving the arm 75 the proper position and by tightening down the set screw 74 after this position has been attained. It is, however, desirable frequently to change the timing, either to retard or advance the spark, during the operation of the engine, and in order that this may take place I provide an actuating lever 82 upon the stud 76. In turning the stud by means of this lever the roller 78 is raised or lowered because of the eccentric position of the shaft 77 relative to the stud 76, and in this way the time of the release of the finger 45 may be varied. The lever 82 is provided with a spring 83 which is adapted to snap down into any one of the notches 84, 84 on the end of the arm 75 so that the arrangement may be held properly in any adjusted position. In temporarily adjusting the lever 82 the tension of this spring is easily overcome so that it may snap into the next notch either one way or the other. Also upon the part 77 I mount a bell crank lever 85, held in place by means of a washer 86 and a cotter pin 87, and this bell crank lever is provided upon one arm with a roller 88 which is adapted to engage the under side of the push rod 79. The other arm of this bell crank lever is connected by means of a suitable link 89 with the governing mechanism of the engine and the arrangement is such that when the speed becomes excessive the bell crank lever will be moved in a counter-clockwise direction (Fig. 8) and the push rod 79 will be lifted to such an extent that it can not engage the finger 45 to cock the magneto. When the speed has decreased the bell crank lever turns in the opposite direction and the push rod may again drop down into operative relation with the magneto.

As before stated, the spark contacts 62 and 63 are normally separated from each other. This is important since if for any reason the magneto gives out it is desirable that a battery circuit be connected to provide the spark. If the contacts are normally closed there will be a very large strain upon the batteries and even if storage batteries were used it would result in the consummation of a larger current than is necessary to produce the spark. Another advantage is gained in this respect and that is the elimination or avoidance of most or all of the reverse current. If these contacts are open during the proper part of the cocking of the magneto, there will be no current flowing which will tend to perpetuate itself and to have a counter effect upon the current which is to produce the spark when the rotor is released. It will be seen that in the normal position the rotor barely overlaps the middle polar projections and it is a fact that the rotor faces have left the middle polar projections by a considerable distance before the contacts 62 and 63 come together. Since the middle projections are the only ones which carry windings any effect between the other projections would not be noticeable in this respect and there is no appreciable counter effect, if any. In cocking the engine the rotor is brought over into approximately the dotted position *a* and upon the fly back it probably reaches the position shown by the dotted lines *b*. With an arrangement of this kind the spark is secured upon the rising flux, and this is desirable since, as has been pointed out, the relation between the rotor faces and the pole faces is such as to bear a peculiarly advantageous relation to the position and operation of the spa[illegible] terminals.

It will be seen that when the rotor is cocked after a considerable movement, certainly after the rotor faces have left the middle polar faces, the contacts will come

together and the further movement of the finger will be taken up by the spring 58. Upon the release of the finger there will be a short snappy action and the flange 59 on the connecting rod 50 will engage the lever 53 and will strike it a sharp hammer blow, thus suddenly opening the contacts at the proper point in the current wave which is simultaneously generated in the magneto coils. If, however, it be desired to utilize the decreasing flux for the spark, the inductor is so cocked as to bring two opposite arms of the rotor approximately opposite the wound polar projections before releasing. In this arrangement it is quite essential that the contacts be kept separated until the flux through the wound polar projections has attained a substantially fixed intensity, that is, an intensity which is not varying. The operation of the spark contact terminals should be as above described.

The arrangement between the end plates, the side plates, the magnets and the pole pieces is important since a very rigid structure is secured. The parts are few and the connecting points are few. The rotor shaft finds bearing at both ends and in this way the proper relation to the poles is constantly maintained. The fact that the push finger can be made independently of the other parts is important since it can then be made of tool steel and can be readily replaced without interfering with any other of the mechanisms. This finger must withstand a considerable amount of wear and tear and such an arrangement as I propose is particularly advantageous.

It will be remembered that the side plates which support a number of parts are adjustably mounted upon the supporting frame or shelf, due to the enlarged openings through which the cap holes pass. The mechanical arrangement between the push finger and the sparking mechanism is such that great accuracy is not required and it is not necessary, therefore, to finish the engaging faces of the shelf and the side plates. Approximate mounting is ample and adjustment is easily secured by shifting the side plates about and then tightening the screws as desired.

The parts are easily dismantled. For instance, the cotter pin 55, if withdrawn, will release the entire magneto arrangement from the sparking arrangement and the other parts are equally easy of access for the purposes of inspection and repair.

No special arrangement is required for supporting the springs which operate the oscillating rotor. The springs are conveniently supported from the side plates which perform other useful functions and in this way the number of parts is kept at a minimum. These plates hold the U-shaped magnets in proper position and in such position that the windings and polar projections do not come very close to the intermediate parts of the magnets. In other words, a better field is the result since leakages are almost entirely eliminated.

The means for timing the spark is advantageous. The operating means is held firmly in any position, regardless of where the spark comes in, even though temporary adjustment, during the running of the machine, is available.

I claim as new and desire to secure by Letters Patent:

1. In a magneto machine, pole pieces, horse-shoe magnets spanning said pole pieces, side plates between which said pole pieces are firmly clamped, end plates bolted to the ends of said side plates, a shaft mounted in said side plates, a rotor on said shaft, an arm on said rotor, and a spring extending from said arm to an extension on the adjacent end plate.

2. In a magneto machine, pole pieces, horse-shoe magnets spanning said pole pieces, side plates between which said pole pieces are firmly clamped, end plates bolted to the ends of said side plates, a shaft mounted in said side plates, a rotor on said shaft, oppositely extending arms on said shaft, extensions on said end plates, and a spring extending between each extension and the adjacent arm.

3. In a magneto machine, pole pieces, horse-shoe magnets spanning said pole pieces, side plates between which said pole pieces are firmly clamped, end plates bolted to the ends of said side plates, set screws passing through said end plates and abutting against said magnets to hold them firmly in engagement with said pole pieces, a shaft mounted in said side plates, a rotor on said shaft, an arm on said shaft, and a spring extending from said arm to an extension on the adjacent end plate.

4. In combination, a pair of tri-polar pole pieces, windings on the middle portions thereof, a four-faced rotor mounted to oscillate between said pole pieces, each of said rotor faces being of a width substantially the same as the width of the middle pole piece and being wide enough to span the distances between the middle pole pieces and the outside pole pieces but not great enough to span the distances between opposite pole pieces, contact mechanism mechanically connected with said rotor, the contacts of said mechanism being normally separated and the normal position of the rotor being such that the rotor faces only slightly overlap the middle pole pieces carrying the windings, and means for operating the rotor to cock it in a direction receding from the middle pole pieces and simultaneously closing said contacts together.

5. In combination, pole pieces, a rotor a

sociated therewith, means for oscillating said rotor, a stationary contact member, an oscillating shaft carrying a contact member for cooperation with said stationary contact member, an operating lever for said oscillating shaft, resilient connections between one side of said operating lever and said rotor, and positive connection between the other side of said operating lever and said rotor.

6. In combination, a pair of pole pieces, a rotor mounted upon a shaft, means for cocking said rotor; spring means for suddenly bringing said rotor back upon its release, an arm upon the rotor shaft, an oscillating shaft, a lever on said oscillating shaft, a connecting rod extending from said arm through an opening in said lever, a head on said connecting rod, a spring disposed between said head and one side of said lever, a collar on the connecting rod adapted to engage the other side of said lever, a contact piece carried by said oscillating shaft, and a stationary contact piece associated therewith, said contacts being normally separated but being brought together by part of the cocking action transmitted through said spring and being suddenly separated by the engagement of said collar with said lever.

7. In combination, a pair of pole pieces, a rotor mounted upon a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon its release, an arm upon the rotor shaft, an oscillating shaft, a lever on said oscillating shaft, a connecting rod extending from said arm through the bifurcated end of said lever, a head on said connecting rod, a spring disposed between said head and one side of said lever, a collar on the connecting rod adapted to engage the other side of said lever, a contact piece carried by said oscillating shaft, and a stationary contact piece associated therewith, said contacts being normally separated but being brought together by part of the cocking action transmitted through said spring and being suddenly separated by the engagement of said collar with said lever.

In witness whereof, I hereunto subscribe my name this 18th day of July, 1911.

EMIL PODLEŠÁK.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

888

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INDUCTOR ALTERNATOR.

APPLICATION FILED DEC. 27, 1911.

1,098,754.

Patented June 2, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

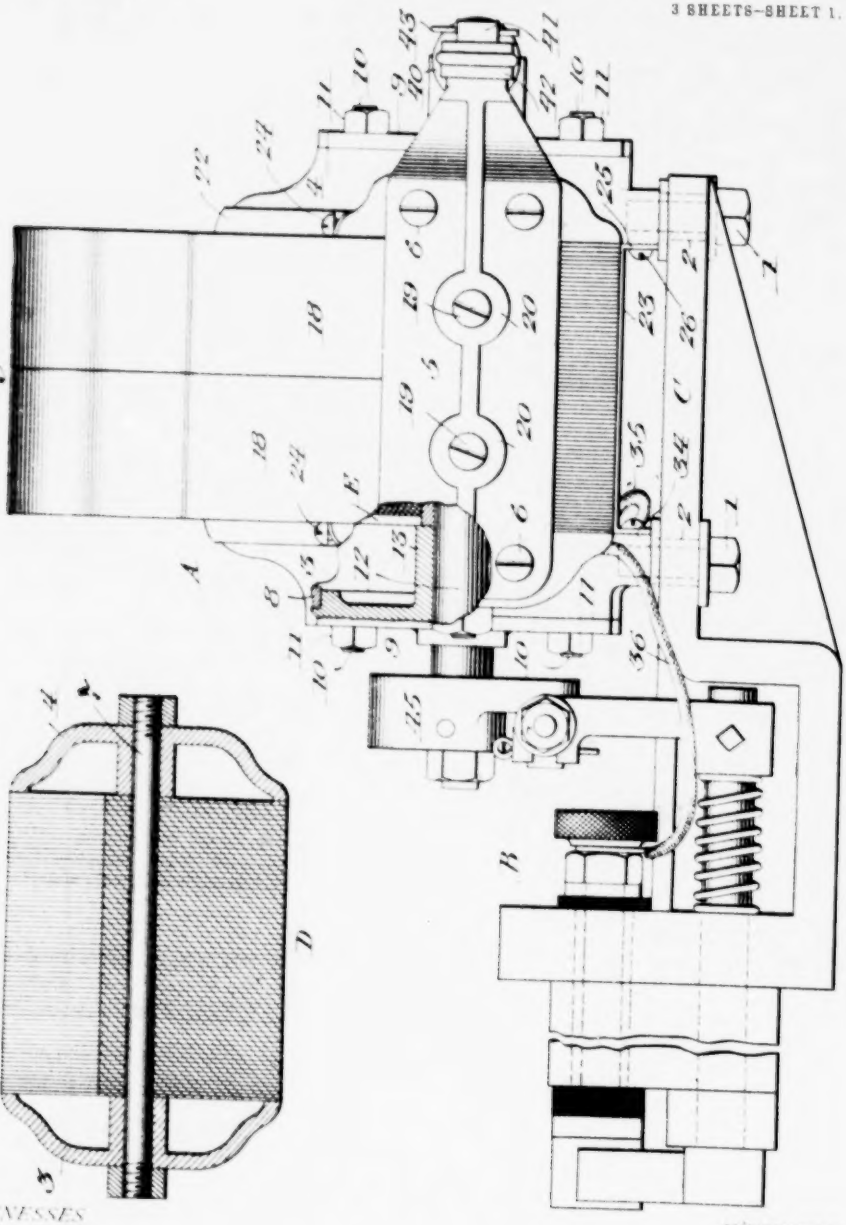


Fig. 4.

WITNESSES

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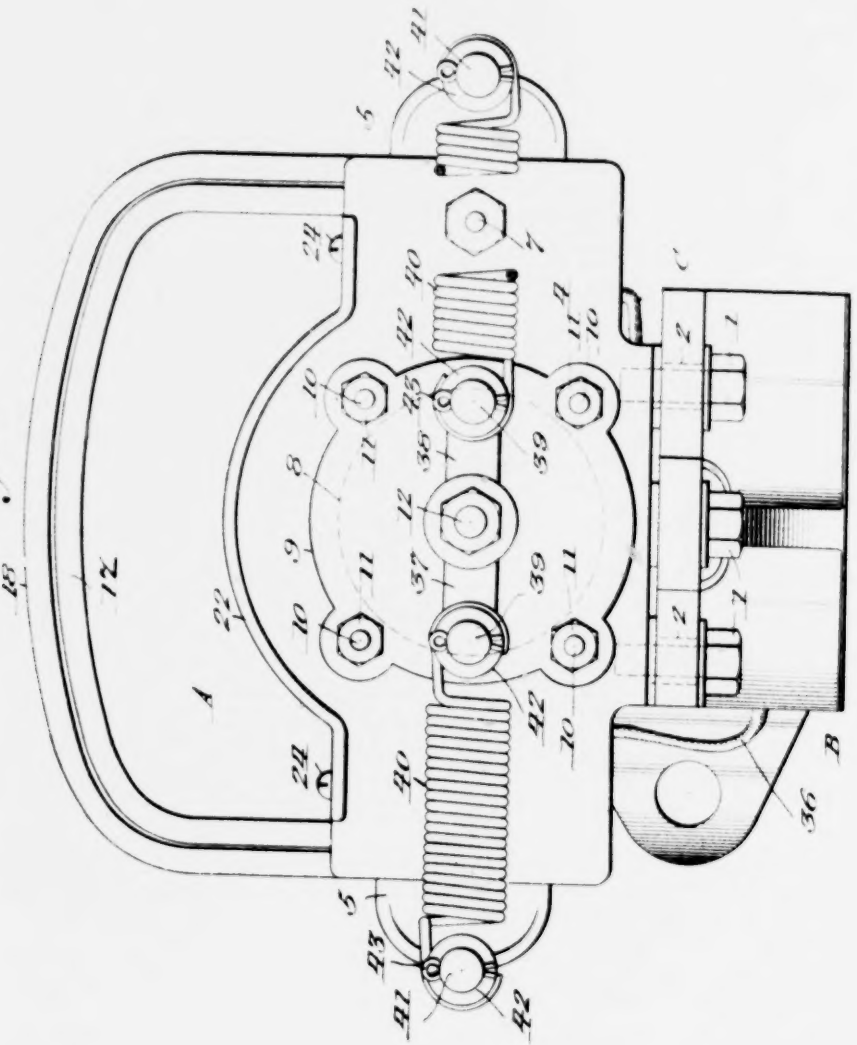
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3 SHEETS-SHEET 2.

Fig. 2.



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Patented June 2, 1914

3 SHEETS—SHEET 3.

Fig. 3.

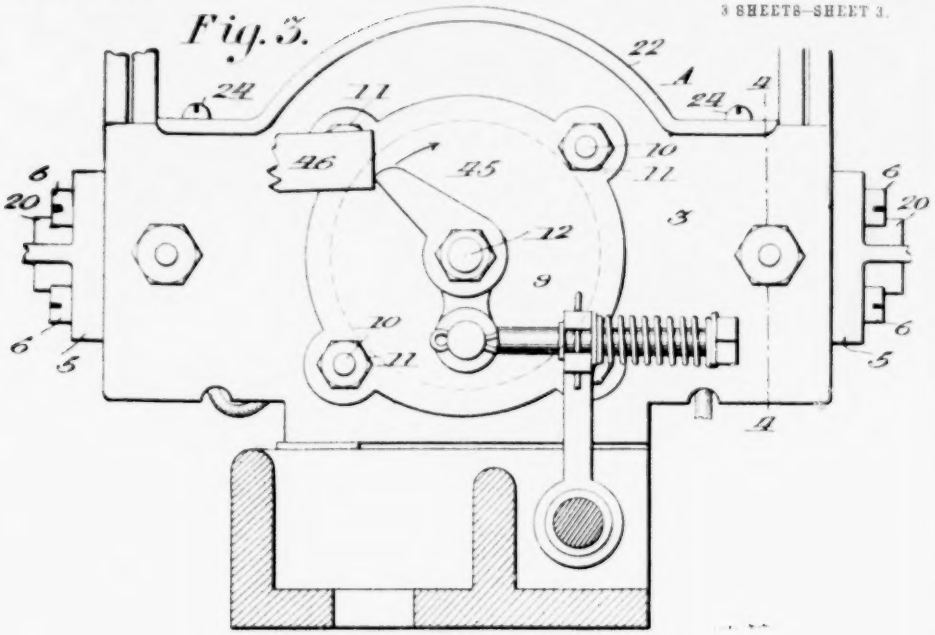


Fig. 5.

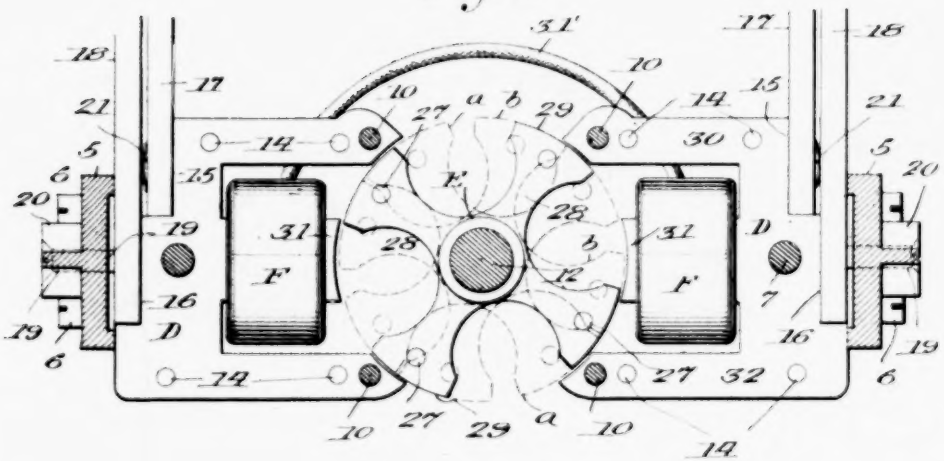


Fig. 6.



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EMIL PODLEŠÁK, OF TIFFIN, OHIO.

INDUCTOR-ALTERNATOR.

1,098,754. Specification of Letters Patent. Patented June 2, 1914.

Original application filed July 21, 1911, Serial No. 639,738. Divided and this application filed December 27, 1911. Serial No. 668,153.

To all whom it may concern:

Be it known that I, EMIL PODLEŠÁK, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Inductor-Alternators, of which the following is a specification.

This application is a division of my application for Letters Patent of the United States, Serial No. 639,738, and is made at the requirement of the United States Patent Office.

The invention relates to current generators of the induction alternator type especially designed for use in connection with gas engine igniters of the mechanical make and break type.

The general object of the invention is to improve and simplify the construction and operation of machines of this character so as to be comparatively inexpensive to manufacture, of durable and substantial design, and having a high efficiency in connection with sparking devices when the size and weight of the machine is considered.

Among the specific objects, the invention has to provide an improved arrangement of pole pieces and inductor or rotor whereby magnetic flux variations can be effectively produced with respect to the generating windings for causing the generation of a sparking current of great intensity, the pole pieces being of the trifurcated type with the middle polar projection wound, and the inductor is of the cruciform type to coöperate with the polar projections to vary the paths of the magnetic flux with respect to the winding.

Another object of the invention is to provide a durable, substantial and simple frame structure for holding the pole pieces, rotor and magnets.

A further object is the employment of improved means for clamping the magnets to the pole pieces and yet obtain effective joints between them without great accuracy in the machining of the parts.

Another object is the employment of improved means for oscillating the rotor or inductor with respect to the polar pieces for producing the magnetic flux variations.

With these and other objects in view, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a side elevation of the machine shown in connection with the sparking device. Fig. 2 is a front view thereof. Fig. 3 is a fragmentary rear view of the machine with the igniter frame in section. Fig. 4 is a sectional view through one of the pole pieces and the side plates of the frame, the section being taken on line 4—4, Fig. 3. Fig. 5 is a partial sectional view of the machine taken transversely to the axis of the rotor and immediately to the front of the pole pieces. Fig. 6 is a perspective view of one of the bowed springs interposed between the extremity of the magnets for clamping the inner magnet against the extremity of the pole piece.

Similar reference characters are employed to designate corresponding parts throughout the views.

In Fig. 1, the current generator A is shown in connection with a make and break igniter B, for which the generator is especially designed, although it may be put to other service. The generator A is mounted on a base C which is a part of the frame of the igniter B, and the frame of the generator is attached to the base C by bolts 1 passing through openings 2 in the base C and screwing into the side plates 3 and 4 of the generator frame, the openings 2 being larger than the threaded shanks of the screws, so that the generator frame can be adjusted on the base in proper relation to the igniter B.

The frame of the generator is non-magnetic and comprises front and rear side plates 3 and 4 and end plates 5, which are fastened to the ends of the side plates by screws 6 so that the said plates form a rectangular frame for holding the pole pieces D, which are preferably laminated and are clamped between the side plates 3 and 4 by means of through bolts 7 adjacent the ends of the side plates. The center of each side plate has an opening 8 that is closed by a removable bearing plate 9 secured in place by bolts 10, said bolts passing from one side to the other and through the same, and

through the pole pieces so that these bolts 10 coöperate with the bolts 7 to hold the pole pieces firmly in place. By removing the nuts 11 of the bolts 10, the plates 9 can be taken off for permitting the rotor E to be taken out. The rotor is mounted on a shaft 12 which passes through internal bearing bosses 13 on the bearing plates 9.

The pole pieces D are trifurcated and made of approximately E-shaped steel stampings that are secured together by rivets 14, and these pole pieces are diametrically disposed with respect to the rotor E. The outer faces of the pole pieces are formed with upper and lower steps 15 and 16, which are spaced from the end plates 5 so as to provide recesses into which the ends of the inner and outer U-shaped magnets 17 and 18 extend, the said magnets being held against lateral displacement by means of the side plates 3 and 4 of the generator frame. The outer magnets 18 are clamped against the steps 16 by screws 19 that are threaded in bosses 20 on the end plates and bear at their inner ends on the extremities of the magnets 18. The extremities of the magnet 17 are held against the steps 15 of the pole pieces by the interposition between the magnets of bowed springs or equivalent resilient devices 21, as shown in Fig. 5. In this manner, the magnets are effectively held in place without their extremities being bored for the reception of screws or other fastenings and at the same time the magnets can be readily taken out. It will be seen that the magnets have a large area of contact with the pole pieces so that magnetic reluctance is reduced to a minimum.

Coöperating with the frame of the machine are top and bottom plates 22 and 23, respectively, the former being better shown in Figs. 2 and 3, and the latter in Fig. 1. The top plate is fastened by screws 24 to the side plates 3 and 4 of the machine frame, and the bottom plate 23 has its edges bent downwardly into flanges 25 through which pass screws or other fastenings 26 that are threaded in the side plates of the machine frame. Thus the side plates 3 and 4, end plates 5, and top and bottom plates 22 and 23 form a tight housing for the generator windings, pole pieces and rotor, so that none of these parts can be injured by the effects of the elements.

As clearly shown in Fig. 5, the rotor E is of cruciform shape in cross section, and it is preferably made of laminæ fastened together by rivets 27. The extremities of the arms 28 are enlarged to give comparatively wide faces 29 that coöperate with the extremities of the polar projections 30, 31 and 32. The polar projection 31 is shown with a polar face of greater area than the polar face of the outer projections 30 and 32, and the polar faces 29 of the rotor are approximately the same as the middle projections in area. The generating windings F are located on the middle polar projections 31, and electro-motive force is generated therein by variations in the paths of magnetic flux through the polar projections and rotor, as will be more fully described hereinafter. These windings F are connected together by a wire 31', one winding being grounded on the frame of the machine at 34, Fig. 1, by a wire 35, and the other winding being connected with the igniter by a wire 36. The windings F are preferably of the formed type and are placed over the middle polar projections to which they are suitably secured. The bolts 10 pass through the outer polar projections so that they do not interfere with the removal or replacing of the windings when occasion requires.

The rotor is adapted to have an oscillatory movement so as to change the magnetic flux through the pole pieces, and hence with respect to the windings for generating a sparking current. On the front end of the rotor shaft 12 which extends forwardly from the front bearing plate are fastened oppositely-disposed crank arms 37 that carry studs 39 to which are respectively secured helical extension springs 40 which have their outer ends fastened to studs or extensions 41 on the end plates 5 of the generator frame, there being on the studs 39 and 41 spools 42 around which the ends of the springs are hooked. These spools are held in place on the studs by cotter pins or equivalent fastenings 43. The springs 40 are normally in axial alinement with each other and with the center lines of the crank arms 37 and 38, and the springs thus hold the rotor in a given position with respect to the pole pieces, such position being shown in the present instance by full lines in Fig. 5. When the rotor is turned, the springs 40 are placed under tension by their inner ends being carried around with the studs 39 as the rotor shaft is turned through a short arc. Upon the shaft being released, the springs contract and effect the return movement of the rotor, but by reason of the peculiar disposition of the springs, the rotor flies beyond its normal central position a short distance and re-bounds back. The means for moving the rotor in opposition to the tension of the springs 40 consists of a wipe arm 45 on the rear end of the rotor shaft, as shown in Figs. 1 and 3, said arm being engaged by a reciprocatory rod 46 or equivalent device, Fig. 3, which moves by a suitable part of the engine with which the generator and igniter are used, the movement being in timed relation with the cycle of the operation, so that the generator and sparking device will be actuated at the proper time. The actuator 46 moves to the right,

Fig. 3, to give a clockwise movement to the arm 45 of only a few degrees, and then upon the return of the actuator, the arm 45 quickly snaps back and allows the rotor to swing rapidly from one polar projection to another for changing the magnetic flux with respect to the generating windings F. More specifically, the rotor is moved from the full line position, Fig. 5, to the dotted line position *a*. This movement is more or less gradual, and as the arms of the rotor are now in line with the outer polar projections, the lines of force will pass through the latter from the positive pole piece through the rotor and outer polar projections of the negative pole pieces. After the rotor has been moved to cocked position, as indicated by the dotted lines *a*, the rotor is released and quickly returned by the springs 40 toward the normal position shown by full lines, but the rotor overtravels such position and reaches the position indicated approximately by the dotted lines *b*. The magnetic flux is now quickly concentrated through the middle polar projections 31, and hence the lines of force thread the generating windings F, and it is during this time that the electro-motive force is built up for producing the igniting current, the operating connections between the rotor and sparking device being such that the electrodes will separate when the current is at maximum intensity.

The details of the operating connections between the igniter and rotor need not here be described, as the same are fully set forth and claimed in the parent application, of which this is a division.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. The combination of a frame, a pole piece secured thereto and forming with the frame a recess, a magnet having one end fitted in the recess, and a clamping screw threaded in the frame and bearing against the magnet to clamp the same against the pole piece.

2. The combination of a frame, a pole piece secured therein and spaced from one end of the frame to form with the latter a recess, the wall of the recess formed by the pole piece being stepped, and magnets having extremities extending into said recess and clamped against the stepped side of the pole piece.

3. The combination of a frame, a pole piece having steps, a plurality of magnets extending into the frame and each bearing on a step of the pole piece, a clamping means between the frame and one magnet, and a yielding element disposed between the magnets and held by said clamping means under tension to clamp the other magnet against the pole piece.

4. The combination of side and end plates, a pole piece secured between the side plates, a magnet having one end extending between the pole piece and one end plate, and means engaged with the end plate and magnet for clamping the latter against the pole piece.

5. The combination of side and end plates, a pole piece secured between the side plates, a magnet having one end extending between the pole piece and one end plate, a second magnet disposed under the first and held against lateral displacement by the side plates, and resilient means held between the magnets for maintaining the second magnet against the pole piece.

6. The combination of side and end plates secured together, a pole piece secured between the side plates and having a stepped surface next to the end plate, a short magnet and a long magnet extending between the end plate and pole piece and engaging the stepped surface thereof, said magnets being held against lateral displacement by the side plates, a clamping means acting between the end plate and long magnet for holding the latter against the pole piece, and a resilient means between the long and short magnet for holding the latter against the pole piece.

7. The combination of a pole piece, a plate fixed with respect thereto, a magnet having one end disposed between the plate and pole piece, and a clamping screw threaded in the plate and having its end bearing on the magnet for clamping the same against the pole piece.

8. The combination of a pole piece, a pair of magnets arranged one within the other, means for holding one magnet against the pole piece, and means disposed between the magnets for holding the other magnet against the pole piece.

9. The combination of a pair of oppositely-disposed pole pieces having their outer faces provided with upper and lower steps, a U-shaped magnet having its extremities clamped against the upper steps of the pole pieces, a larger U-shaped magnet fitting over the first and clamped against the lower steps, means for clamping the larger magnets into contact with the pole pieces, and yielding means interposed be-

tween the extremities of the two magnets whereby the first-mentioned magnet is held against the pole pieces.

10. The combination of a frame having connected side and end plates, pole pieces secured within the frame, a rotor between the pole pieces, said side plates having openings of such size as to permit the rotor to pass axially therethrough, bearing plates secured at the openings, and an axle for the rotor journaled in the bearing plates.

11. The combination of a frame having connected side and end plates, pole pieces secured within the frame, a rotor between the pole pieces, said side plates having openings of such size as to permit the rotor to pass axially therethrough, bearing plates secured at the openings, an axle for the rotor journaled in the bearing plates, and through bolts passing through the bearing and side plates and through the pole pieces.

12. The combination of pole pieces, side plates, bolts passing through the side plates and pole pieces, end plates bolted to the ends of the side plates, horseshoe magnets spanning the pole pieces and having their ends disposed between the end plates and pole pieces and also between the side plates, and means on the end plates for clamping the magnets against the pole pieces.

13. The combination of pole pieces having inner and outer polar projections, side plates having openings, a rotor disposed between the pole pieces and removable through the openings of the side plates, bearing plates fitted to the openings, and bolts passing through the bearing plates and outer projections of the pole pieces.

14. The combination of pole pieces having inner and outer polar projections, side plates having openings, a rotor disposed between the pole pieces and removable through the openings of the side plates, bearing plates fitted to the openings, bolts passing through the bearing plates and outer projections of the pole pieces, and formed windings fitted to the inner polar projections of the pole pieces.

15. The combination of side plates, pole pieces secured between the side plates, a rotor between the pole pieces, magnets connected with the pole pieces, end plates fastened to the side plates and cooperating therewith for holding the magnets in place, said end plates having extensions, crank arms connected with the rotor, and springs connected with the crank arms and with the extensions of the end plates.

16. The combination of pole pieces, magnets, end plates for clamping the magnets to the pole pieces, said end plates having extensions, a rotor disposed between the pole pieces, crank arms connected with the rotor, and springs connected with the said crank arms and the extensions of the end plates for normally holding the rotor in a given position with respect to the pole pieces.

17. The combination of side plates, pole pieces secured between the same, windings thereon, end plates secured to the side plates, magnets clamped between the end plates and pole pieces, a rotor rotatably mounted between the pole pieces and supported by the side plates, a top plate fastened to the side plates and extending between the extremities of the magnets, and a bottom plate disposed under the pole pieces and secured to the side plates.

18. The combination of a supporting base, side plates secured thereto, pole pieces disposed between the side plates, windings thereon, a rotor between the pole pieces and supported by the side plates, U-shaped magnets having their extremities clamped to the pole pieces, a top plate disposed under the magnets and secured to the side plates, and a bottom plate disposed under the pole pieces and above the said base and secured to the side plates, said top and bottom plates cooperating with the side plates to form a housing for the rotor and windings.

In testimony whereof I affix my signature in presence of two witnesses.

EMIL PODLEŠÁK.

Witnesses:
JENNIE H. FIEGE,
HAL W. MICHAELS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

E. PODLESAK.

IGNITION DEVICE FOR EXPLOSIVE ENGINES.

APPLICATION FILED NOV. 29, 1912.

1,101,956.

Patented June 30, 1914.

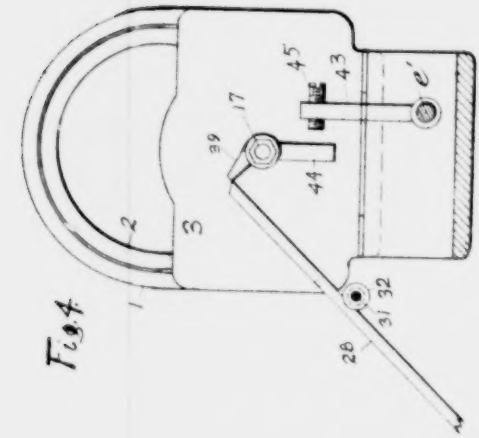


Fig. 4

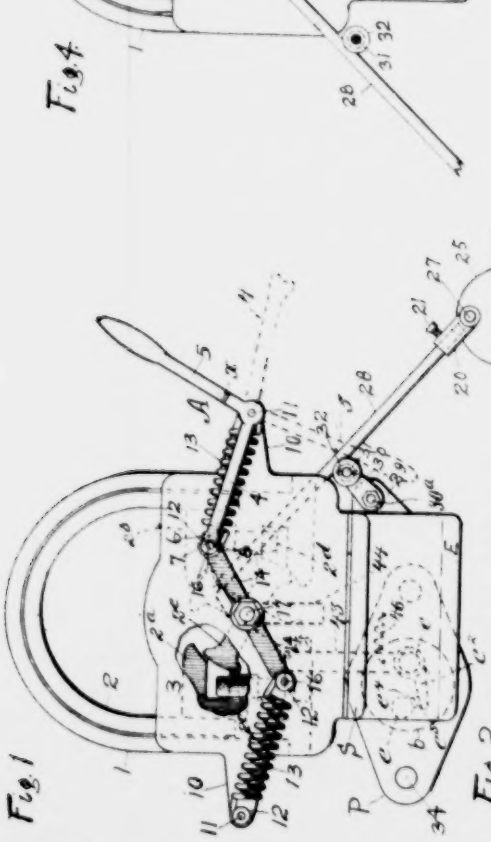


Fig. 1

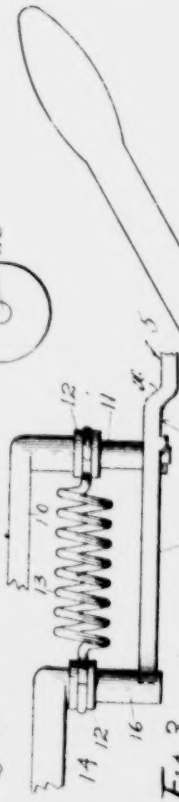


Fig. 2

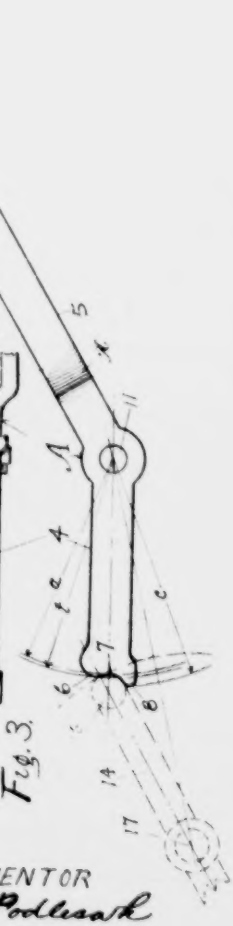


Fig. 3

WITNESSES

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UNITED STATES PATENT OFFICE.

EMIL PODLESAK, OF TIFFIN, OHIO.

IGNITION DEVICE FOR EXPLOSIVE-ENGINES.

1,101,956. Specification of Letters Patent. Patented June 30, 1914.

Application filed November 29, 1912. Serial No. 734,143.

To all whom it may concern:

Be it known that I, EMIL PODLESAK, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Ignition Devices for Explosive-Engines, of which the following is a specification.

This invention relates to a combined make and break igniter and magneto of the type described in my application Serial No. 639,738, filed July 21, 1911, wherein the rotor is operatively related to the movable electrode of the igniter to produce an igniting spark as the rotor causes an electric impulse to be generated in the windings, the rotor being moved in one direction by an actuator operating in timed relation to the piston of the engine and returned quickly by spring action to normal position when released from such actuator, whereby the rotor causes a rapid change in the magnetic flux through the energizing windings of the generator and a consequent flow of the igniting current.

The principal object of the present invention is the provision of a device in the form of an attachment for such combined igniters and generators, whereby the rotor can be manually operated to produce an electric impulse for the igniting spark so that the engine can be started "on the spark" or without the necessity of cranking. This is especially advantageous in large engines where starting by cranking is practically impossible. Small engines equipped with the combined igniter and generator described do not need this manual starting device as the generator will operate with the engine during cranking, no matter how slowly the cranking takes place, since the sparking current is generated by the return of the rotor under the influence of its springs when the rotor is released from the actuating element that moves synchronously with the crank shaft during the cranking. In the case of large engines, however, the starting is accomplished by applying a charge of explosive mixture to the cylinder when the piston is in the right position for starting and then operating the rotor actuating device by hand, such device serving to engage some part connected with the rotor so as to move the latter to "cocked" position, and at the same time place the return springs for the rotor under tension, and while in such "cocked" position, the starting device is released to permit the rotor to rapidly return under the contraction of its springs and thereby cause the igniting current to be generated in the winding, the movable electrode of the igniter being, of course, operated by the rotor, as in normal operation, so that the spark will be produced to ignite the charge in the cylinder.

Another object of the invention is to so construct the magneto operating or starting device that the same can be used as a gage whereby to hold the rotor in its proper "cocked" position so that the actuating means for the rotor can be set to oscillate the rotor through the proper angular movement and release rotor at the proper instant. This is of particular importance, as heretofore there has been no means of accurately adjusting the actuator for the rotor, general directions being given by the manufacturer for the user to set the actuator to give the rotor an angular movement of a certain number of degrees. Without proper gaging means, it is difficult to obtain an adjustment to give the rotor the required number of degrees, and as a result, when the rotor is not given the proper angular movement, a current of sufficient strength cannot be generated, so that less power is obtained from the engine and starting is difficult, whereas when too great an angular movement is given to the rotor, due to improper set of the actuator, undue strain is placed on the parts so that excessive wear results.

With these and other objects in view, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a side elevation of the apparatus showing the use of the starting and gaging device in position for gaging the set of the actuator with the rotor in "cocked" position. Fig. 2 is a detail plan view showing the starting and gaging device in its relation to the spring-actuating means for the rotor. Fig. 3 is a side view of the starting and gaging lever showing its relation to the crank arm of the rotor. Fig. 4 is a sectional view of the device showing the means for actuating the rotor to "cocked" position.

and the relation of the rotor shaft to the movable electrode.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawing, 1 and 2 designate the permanent magnets of the generator, and 2^a and 2^b the pole pieces having generating windings 2^c and 2^d, respectively, there being mounted between the pole pieces a cruciform rotor 2^e. The rotor is mounted on a shaft 17 which is journaled in end plates 3 which form part of the frame of the magneto. On one end of the shaft 17 is fastened a bar forming the oppositely-disposed crank arms 14 which are provided with pivot pins 16 that carry spools 12 to which the inner ends of the rotor returning springs 13 are connected, the outer ends of the springs being hooked over spools 12 on the pivot posts or pins 11. The springs 13 and arms 14 normally lie in a straight line passing through the pivot posts 11 and rotor shaft 17, and when the rotor is moved to "cocked" position, the crank arms 14 move with the rotor and place the springs 13 under tension by expansion, as shown in Fig. 1. On the end of the shaft 17 opposite from the crank arms 14 is a trip finger 39 and a hammer arm 44. Adapted to engage with the trip finger 39 is a push rod or actuator 28 which is connected by a wrist pin 27 with a disk 25 fastened to a shaft 26 which rotates with the crank shaft of the engine. The push rod 28 is supported at a point intermediate its ends by a grooved roller 32 journaled on the pin 31 which is carried by an arm 30, such arm being adjustably connected by a bolt 30^a to a lug 39 on the frame of the device. This roller 32 forms a fulcrum on which the push rod has a rocking movement simultaneously with its back and forth longitudinal movement and the tip or free end of the rod 28 is adapted to engage the trip finger 39 to move the rotor to "cocked" position and then to slip off the trip finger so that the rotor can snap back to normal position. In order to obtain the proper adjustment of the actuator or push rod 28 so that the trip finger will be released at the proper moment, the roller-carrying arm 38 can be swung up or down about the bolt 30 as a center, and furthermore the connection of the rod 28 with the rotating element 25 can be adjusted by moving the rod 28 into or out of the socket piece 20 and clamped in the right position by the set screw 21.

The igniter is of the usual construction and comprises a frame body P which has stud holes 34 for clamping the body to the engine cylinder. On the body P of the igniter is an extension E which is provided with a shelf S on which the generator is mounted. The cylindrical body portion 5^b enters the usual opening in the engine cylinder for the igniter. In this body portion 5^b are fixed and movable electrodes e and e', the latter having an arm e^2 that carries a sparking point e^3 adapted to engage the sparking point e^4 on the fixed electrode, the said sparking points being, of course, on the inner ends of the electrodes so as to ignite the explosive charges in the engine cylinder. On the outer end of the movable electrode e' is an arm 43 which carries an anvil member in the form of a screw 45 so positioned as to be struck by the hammer arm 44, the screw 45 being adjusted with respect to the hammer arm to obtain the proper results. The movable electrode is provided with a spring or equivalent means tending to hold the sparking terminals e^3 and e^4 in contact and one way of accomplishing this is to provide a spring 46, Fig. 1, which is connected with the arm 43 and with the body P of the igniter. When the rotor is "cocked", the arm 44 moves away from the arm 43 to thereby permit the electrodes to come into contact, and on the return movement of the rotor, the arm 44 imparts a powerful hammer blow on the arm 43 to effect a quick separation of the electrodes for the production of the igniting spark.

The starting and gaging device which constitutes the subject-matter of the present invention will now be described. This consists of a lever 4 which is fulcrumed on one of the pivot posts 11 and has a handle 5, so that in reality the device is a double arm or bell crank lever having a pivotal movement on the pin or post 11. The arm 4 is sufficiently greater than the distance between the pivot post 11 and the outer end of the adjacent arm 14 of the rotor that the free end of the arm 4 can engage the pivot post or member 16 of the crank arm 14 and cause the rotor to be moved to "cocked" position by the upward movement of the arm 4. Normally the starting device A is suspended in the dotted line position, Fig. 1, and to start the engine by means of a spark, the handle 5 is swung upwardly to the left to engage the arm 4 with the member 16 of the rotor crank arm 14. The movement of the handle 5 is then continued in the same direction so as to give an angular movement to the rotor and to place the springs 13 under tension. Finally, when the "cocked" position is reached, the arm 4 will slip under the member 16 of the crank arm 14 and allow the rotor to spring back to its normal position. It does not matter how slowly the rotor is moved to "cocked" position by the manually actuated starting device A, as the electric impulse is generated by the return movement of the rotor from "cocked" position when the arm 4 releases the rotor. It will be understood that the electrodes of the

igniting device will be separated at the time the electric impulse is generated, just as in the normal operation of the ignition apparatus. In order that the arm 5 may clear the member 16, the said arm is provided with an offset *x*, thereby permitting the arm 5 to be raised past the member 16 and the arm 4 engaged with such member.

To adapt the device A as a gage for holding the rotor in "cocked" position while the actuating means 28 is being adjusted, the free extremity of the arm 14 is provided with two projections 6 and 8 with an intermediate depression 7, the bottom of the depression being at a radial distance *a*, Fig. 3, from the center of the pivot post 11, while the projections 6 and 8 are located at the radial distances *b* and *c*, respectively. When the arm 4 is brought into engagement with the member 16, the projection 6 will first engage the member and finally a position is reached where the member 16 enters the depression 7, as shown in Fig. 3, and in this position the projection 8 locks the parts against return movement under the tension of the springs 13, and as the combined length of the arm 4 and crank arm 14 is greater than the distance between the center of the crank shaft 17 and pivot post 11, a toggle arrangement is provided, locking the rotor indefinitely in "cocked" position. The actuating element 28 can now be adjusted in the part 20 and the arm 30 also adjusted so that the tip of the member 28 will just engage the tip of the trip finger 39. After this adjustment is effected, the device A is released from the member 16 to allow the rotor to return to its normal position. In this manner, the release of the rotor from the actuating mechanism can be easily, quickly and accurately determined and thus the best operating results of the generator, igniter and engine obtained.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. In an ignition apparatus, the combination of a current generator including a rotor, an actuator for moving the rotor in one direction and automatically releasable therefrom, means for quickly moving the rotor in the opposite direction when released from the actuator, and a manually-actuated device for moving the rotor and releasing the same similarly to the said actuator.

2. In an ignition apparatus for explosive engines, the combination of a current generator including a rotor, engine-operated means for moving the rotor to, and releasing it at, cocked position, means for suddenly moving the rotor upon being released, and a manually-operated device for moving the rotor to, and releasing it at, cocked position for starting the engine by spark ignition.

3. In an ignition apparatus for explosive engines, the combination of a current generator including a movable inductor, an actuating means releasably engaged with the inductor for moving it to a given position, means for suddenly moving the inductor after such position is reached, and a starting device for moving the inductor to, and releasing it at, said position for the generating of ignition current to start the engine.

4. In an ignition device for explosive engines, the combination of a current generator including a rotor, an arm on the rotor, a spring connected with the arm, an engine-operated device for moving the rotor in a direction to place the spring under tension and adapted to then release the rotor, and a manually-operated device adapted also to move the rotor to place the spring under tension and thereupon release the rotor.

5. The combination of a current generator including a rotor, a crank arm on the rotor, a spring connected with the rotor, an actuator for the crank arm, and a lever having an arm adapted to releasably engage the crank arm for moving the rotor and releasing the same similarly to the said actuator.

6. A current generator including a rotor, a crank arm connected with the rotor, a spring having one end connected with the arm, an anchor for the other end of the spring, and a device mounted on the anchor for the spring and movable into engagement with the crank arm to move the latter and place the spring under tension and release the arm for permitting the spring to quickly return the rotor.

7. The combination of a current generator including a rotor, a crank arm on the rotor including a projecting member, a spring connected at one end with the said member, and a swinging device movable into engagement with the said member to swing the crank arm and place the spring under tension and releasable from the said member to permit the spring to quickly return the crank arm and rotor to normal position.

8. The combination of a current generator including a rotor, a crank arm on the rotor having a projecting member, a spring connected at one end with the member, an anchor for the other end of the spring, a

swinging member pivoted on the anchor and longer than the spring and having its free end adapted to engage the member for swinging the arm and moving the rotor while placing the spring under tension and to release the member to permit the spring to quickly return the arm and rotor.

9. The combination of a current generator including a rotor, a device for moving the rotor to cocked position, means for quickly moving the rotor from cocked position, and a gaging device pivoted on the generator for moving the rotor to cocked position and for holding it in a predetermined cocked position to permit the device to be adjusted with respect to the rotor.

10. The combination of a current generator including a rotor, an adjustable actuator for moving the rotor to a given position and then releasing the rotor, means for quickly moving the rotor when released, and a device mounted on the generator to engage the rotor for moving same into and holding it in said given position for permitting the adjustment of the actuator.

11. The combination of a current generator including a rotor, a trip finger connected with the rotor, a push rod adjustably mounted with respect to the trip finger to engage with and move the trip finger to a given position and then release the same, means for quickly moving the rotor when the actuator releases the trip finger, and a device for moving the rotor and holding it in such position of release to permit the actuator to be adjusted with respect to the trip finger.

12. The combination of a current generator including a rotor, a crank arm connected with the rotor, a member on the arm, a spring connected with the crank arm, a device movable into engagement with the member for moving the arm against the tension of the spring and adapted to interlock with the said member for holding the arm stationary while the rotor is in cocked position, and a rotor actuator adapted to be adjusted with respect to the rotor while held in cocked position by the said device.

13. The combination of a current generator including a rotor, an arm on the rotor, means for moving the rotor to cocked position, a spring placed under tension by the movement of the rotor to cocked position for returning the rotor when released from the actuator at cocked position, a swinging member movable into engagement with the arm for moving the rotor to cocked position and adapted to hold the arm in such cocked position, and means for adjusting the position of the actuator while the rotor is held in cocked position by the said swinging member.

14. The combination of a current generator including a rotor, an arm thereon, a spring connected with the arm, a member on the arm, a swinging lever mounted on the generator to engage the member and slip past the same to move the rotor to cocked position and having means with which the member is adapted to interlock for holding the member in cocked position, and an engine-operated actuator for moving the rotor to cocked position and adjustable with respect to the rotor while the latter is held in cocked position by the said swinging lever.

In testimony whereof I affix my signature in presence of two witnesses.

EMIL PODLESAK.

Witnesses:
A. E. SCHALK,
B. F. HABERINGER.

E. PODLESAK.

CURRENT GENERATOR AND IGNITER FOR INTERNAL COMBUSTION ENGINES

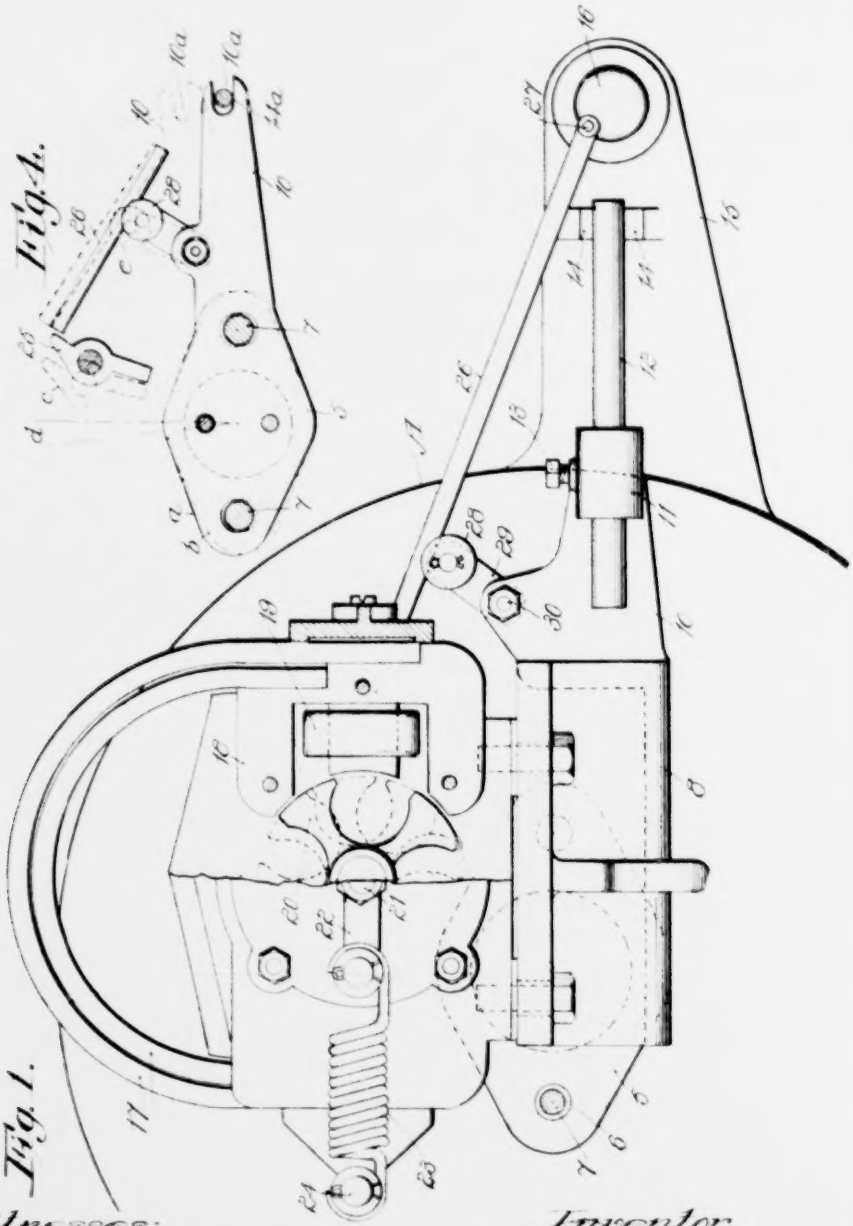
APPLICATION FILED DEC. 23, 1914.

Reissued Feb. 9, 1915.

13,878.

2 SHEETS-SHEET 1

Fig. 1.



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E. PODLESAK.

CURRENT GENERATOR AND IGNITER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED DEC. 23, 1914.

Reissued Feb. 9, 1915.

13,878.

2 SHEETS-SHEET 2.

Fig. 3.

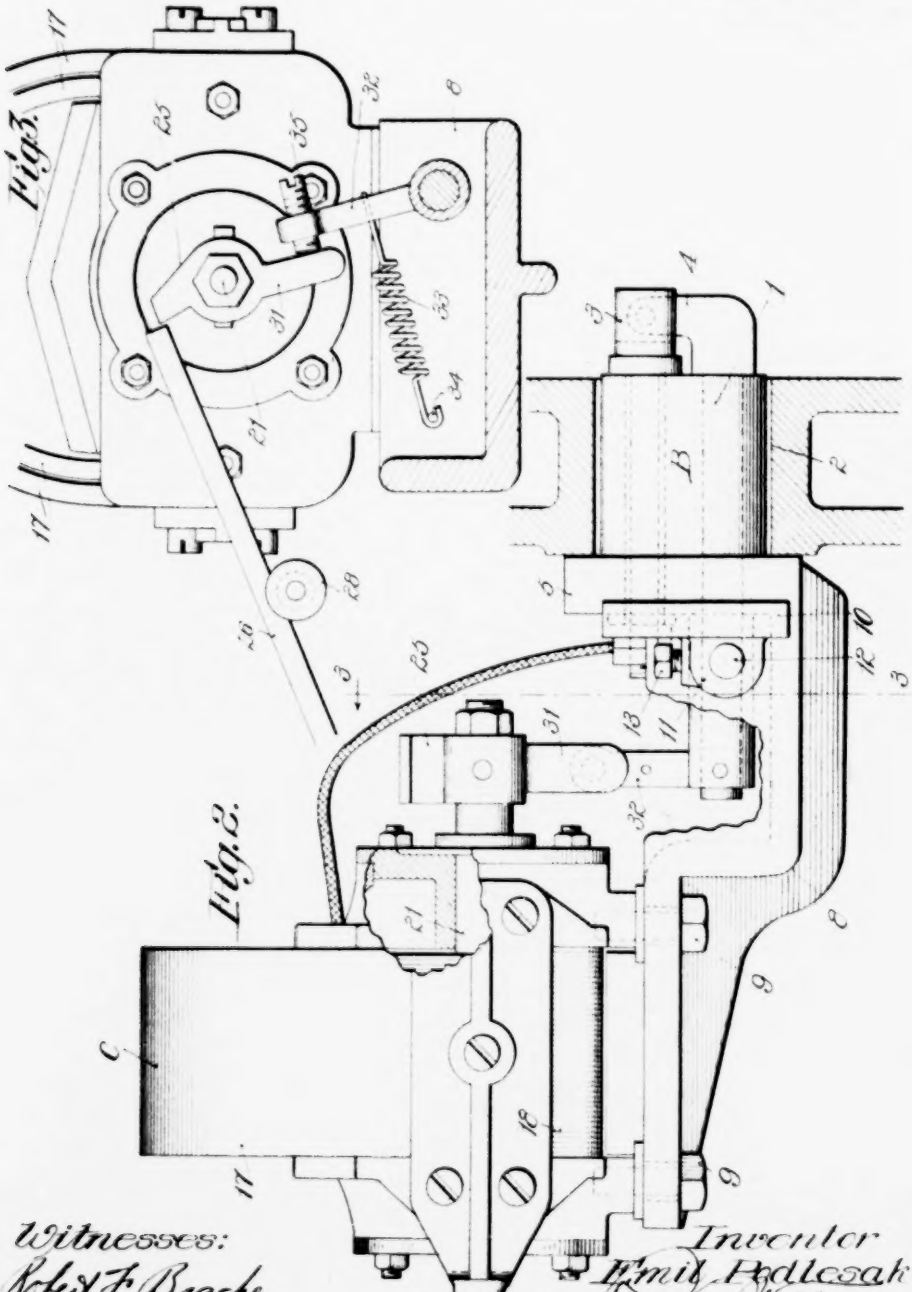


Fig. 2.

Witnesses:
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Albin C. Ahlberg.

Inventor
Emil Podlesak
By Lynn C. Williams
Attorney

UNITED STATES PATENT OFFICE.

EMIL PODLESAK, OF TIFFIN, OHIO.

CURRENT-GENERATOR AND IGNITER FOR INTERNAL-COMBUSTION ENGINES.

13,878. Specification of Reissued Letters Patent. Reissued Feb. 9, 1915.

Original No. 1,055,076, dated March 4, 1913. Serial No. 690,921. Application for reissue filed December 23, 1914. Serial No. 878,726.

To all whom it may concern:

Be it known that I, EMIL PODLESAK, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Current-Generators and Igniters for Internal-Combustion Engines, of which the following is a specification.

This invention relates to igniters of the make and break type and in which the magneto or current generator is combined therewith as a unitary structure that is fastened to the head or other suitable part of the engine cylinder, the rotor of the generator being operatively connected with the movable electrode of the igniter so that a reciprocatory actuator, push rod or equivalent means operating on the rotor trip finger against the tension of spring means causes the rotor to move to "cocked" position while the electrodes of the igniter are brought together, and then released from such "cocked" position so that the electromotive force generated by the sudden return movement of the rotor through the magnetic field of the generator will produce the igniting current whereby the spark is produced between the electrodes in the compression chamber of the engine. The combination of means and instrumentalities above referred to is the subject-matter of my pending application for Letters Patent of the United States, Serial No. 668,153, filed December 27, 1911, and the present invention relates to improvements especially adapted for combined igniters and generators of the type referred to.

The actuating means for the rotor and movable electrode is mounted on the engine cylinder or other suitable part and is operatively connected with some moving mechanism and has no connection with the magneto or igniter, since the actuator, which may be a push rod, rotating or oscillatory arm or the like, merely contacts with the trip finger of the rotor. As the igniter and generator must be removed from time to time for cleaning the electrodes and other reasons, it is of great importance that the igniter and generator be replaced in exactly the same position it was before removal; otherwise, the push rod will not be disposed in proper relation to the trip finger of the rotor to accomplish satisfactory results in the operation of the engine, generator and igniter. The reason for this liability of the igniter being replaced in a different position from that which it originally occupied when all the operating parts, were adjusted to accomplish the best results, is due to the fact that the holes in the body of the igniter for receiving the bolts or fastening studs are made larger than the bolts or studs, as is also the opening in the engine cylinder for receiving the body of the igniter, this "latitude" between the parts being provided so as to facilitate easy removal of the igniter and to obviate the necessity of careful and expensive machining and fitting of the parts. By reason of the liability to error in replacing the igniter, there is provided an arm or equivalent means on the igniter body to inter-engage with a fixed part on the engine cylinder, so that there can be but one position in which the igniter can be attached to the cylinder, and that position is the one where the push rod or other actuator is in proper relation to the trip finger of the rotor. As the result of this arrangement, it is never necessary to adjust the relation of the various instrumentalities in replacing the igniter when it has been removed for cleaning or any other purpose.

In addition to the foregoing objects and advantages, the invention has certain other minor advantages which will appear hereinafter as the description proceeds in reference to the accompanying drawings, in which—

Figure 1 is a front view of the combined igniter and current generator applied to the head of an engine cylinder, part of the generator being shown in section. Fig. 2 is a front view thereof showing a portion of the cylinder head in section. Fig. 3 is a sectional view on line 3—3, Fig. 2. Fig. 4 is a diagrammatic view to show the results of a defective positioning of the igniter with respect to the operating push rod.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the head or other wall of a cylinder of an internal combustion engine; B, the make and break igniter; and C, the magneto current generator of the inductor type.

The igniter B comprises a cylindrical body 1 which passes through an opening 2

in the cylinder head A, the opening being of slightly larger diameter than the diameter of the igniter body, so that the latter can be easily inserted or removed. Passing through the igniter body is a fixed electrode 3 with which coöperates a movable or rocking electrode 4. The outer end of the igniter body is formed with a rhomboidal plate 5, which, as shown in Fig. 1, has bolt-receiving openings 6 that are slightly larger in diameter than the fastening bolts or studs 7 that pass through the openings and are fastened to the cylinder head A. Thus, there is considerable latitude allowed between the body of the igniter on the one hand and the cylinder head and fastening bolts on the other, and by reason of this, the igniter body is liable to be fastened to the cylinder head in a variety of positions within the limit of this latitude, the disadvantages of which have been hereinbefore pointed out, but are overcome by the improvements later to be set forth.

Extending from the plate portion 5 of the igniter body is a shelf or bracket 8 which forms a base to which the generator C is removably secured by stud bolts 9. Projecting laterally from the bracket or shelf 8 is an arm 10 which is formed at its outer extremity with a boss or enlargement 11 that has a passage through which extends an extension rod 12, the rod being fastened in any desired position by a set screw 13 or equivalent means. The outer extremity of this extension rod is located at a considerable distance from the axis of the igniter and this extremity is adapted to engage some fixed part of the engine, such for instance as lugs 14 on the arm 15 in which the operating shaft 16 rotates. The lugs 14 are spaced apart far enough for the extension rod to enter between them as the igniter body is inserted in the opening in the engine cylinder, and when thus positioned, it is impossible for the igniter body to shift angularly or around its axis and thereby disturb the proper relation of the igniter and generator operating means. The parts 10, 12 and 14 thus constitute means for insuring the proper positioning of the igniter and the design of the parts is such that no special care or adjustment is required in taking off or replacing the igniter.

The generator C is fully set forth in the pending application hereinbefore referred to, so that only a brief description here is deemed necessary. The generator comprises permanent horseshoe magnets 17 fastened to E-shaped pole pieces 18, on the middle projections of which are generating coils 19. In the present drawings, only one pole piece and coil is shown in Fig. 1, the other corresponding parts being concealed from view. Between the pole pieces oscillates a cruciform rotor 20 mounted on a shaft 21 which has at one end oppositely disposed crank arms 22 which are connected with springs 23 that assume an alining position through the axis of the rotor when the latter is idle, the outer ends of the springs being fastened to studs 24 on the generator frame. On the opposite end of the rotor shaft is a trip finger 25 which is adapted to have a wiping engagement with a push rod 26 or other equivalent actuator, which rod has its end opposite from the trip finger connected with the crank pin 27 of the rotating shaft 16. The push rod or actuator has a combined reciprocatory and rocking movement on a bearing pulley 28 journaled on a support 29 which is fastened by a bolt or equivalent means 30 to the arm 10 of the igniter frame, said bolt forming a pivot on which the member 29 can be adjusted to different positions for bringing the free end of the push rod 26 into proper coöperative relation with the trip finger 25. The trip finger has a tail piece or arm 31 which is adapted to be engaged by an arm 32 fastened to the outer end of the movable electrode 4, the arm 32 being held yieldingly against the arm 31 by a helical extension spring 33 which has one end connected with the arm 32 and the other end anchored at 34 on the igniter frame. To obtain the proper set of the sparking points of the electrodes with respect to the rotor of the generator, one arm, such as 32, has an adjustable screw 35 which engages the arm 31. The spring 33 is of less tension than the return springs 23 of the rotor and is sufficient to maintain the arms 31 and 32 in contact during the first part of the cocking movement of the armature and to maintain the electrodes in contact during the final part of such cocking movement, it being understood that the electrodes are normally separated, and that they come into contact before the rotor or armature finishes its cocking movement, or the position of the rotor shown by dotted lines in Fig. 1. At the end of the cocking movement, the push rod 26 slips off the tip of the trip finger, and the springs 23, which have been extended or placed under tension during the cocking movement, quickly snap the rotor back to and beyond its normal position, as indicated by the dot and dash lines, Fig. 1. This quick movement of the rotor quickly changes the path of the magnetic flux through the pole pieces and rotor, with the result that a high electro-motive force is induced in the generating coils, the maximum electro-motive force occurring at about the time the electrodes are separated during the return movement of the arm 31 of the trip finger, such arm being adapted to strike the arm 32 a hammer blow for effecting a quick separation of electrodes.

By referring to Fig. 4 the effect of a defective positioning of the igniter is clearly

depicted. Without the use of the positioning controlling parts 10, 12 and 14, it is possible for the igniter to be secured in either the full line position *a* or dotted line position *b*, because of the latitude provided between the igniter body and the bolts and cylinder wall. In other words, the igniter can be fastened to one side or the other of its true central position to an extent corresponding to the angle *d*. Thus, the trip arm of the rotor 25 would be in the dotted line position *c* when the igniter is in the dotted line position *b*, and as a consequence the push rod 26 would not be long enough to operate the trip finger 25, and furthermore the push rod supporting roller 28 would be raised to the dotted line position *e*, thereby raising the active end of the trip rod above the tip of the trip finger. When the igniter body is in the full line position *a*, the trip finger is shifted to the right and the supporting roller 28 is lowered so that the push rod and trip finger will obviously be in proper position. These contingencies can be guarded against by providing the arm 10 on the igniter body and having some means on the fixed part of the engine to engage such arm, such means being the lugs 14, as in Fig. 1, or a bolt or pin 14^a engaging in the slot 10^a of the arm 10, as in Fig. 4.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. The combination of an engine cylinder, a make and break igniter, fastening means for securing the igniter in position on the cylinder, an electric generator having its movable element operatively connected with the movable element of the igniter, an actuator for the movable elements of the igniter and generator, said igniter being removable from the cylinder while the actuator remains in place, and means in addition to the said fastening means for insuring the correct positioning of the igniter with respect to the actuator when the former is replaced on the engine after removal and for preventing shifting of the igniter, said latter means comprising engaged parts on the engine cylinder and igniter.

2. The combination of an engine cylinder, an igniter, means for removably fastening the igniter on the cylinder, there being sufficient play between the parts to insure removal of the igniter while rendering the igniter liable to replacement for different positions, an actuator for the igniter requiring a predetermined position of the igniter with respect thereto, and means partly on the igniter and partly on the engine for insuring such predetermined relative position of the actuator and igniter.

3. The combination of an engine cylinder, an igniter and electric generator forming a unitary structure removably mounted on the cylinder, fastening means for the said unitary structure, said structure being liable to replacement in different positions on the cylinder, an actuator for the movable elements of the generator and igniter and operatively connected with the moving part of the engine, and means in addition to the said fastening means for insuring a predetermined relative position of the actuator and movable elements of the igniter and generator, said latter means consisting of relatively fixed parts of the said structure and engine cylinder which inter-engage when the said structure is in proper position.

4. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising a laterally-extending arm on the igniter, and a fixed part on the engine with which the arm is adapted to engage.

5. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising an arm on the igniter, a longitudinally adjustable member on the arm, and a part fixed on the engine with which the said member is adapted to releasably engage.

6. The combination of an engine cylinder, a make and break igniter mounted thereon and liable to assume different positions within certain limits, an actuator for the movable element of the igniter, means for moving the actuator, a laterally-extending arm on the igniter, and means fixed on the engine with which the arm is removably connected to insure such position of the igniter that the actuator and movable electrode will be in proper relation to each other, and means on the arm for supporting the actuator.

7. The combination of an engine cylinder, a make and break igniter removably mounted thereon and liable to assume different positions within certain limits, a generator carried by the igniter and removable therewith as a unitary structure, the movable elements of the igniter and generator being operatively connected, an actuator for the said movable elements, a moving part of the engine with which the actuator remains connected while the igniter and generator are removed, and engaging means between the said structure and engine cylinder for permitting the placing of the latter in only one position.

8. The combination of an engine cylinder having an opening, a make and break igniter secured in the opening and liable to assume different positions within certain limits, a generator mounted on the igniter and removable therewith, means for operatively connecting the movable elements of the igniter and generator, a push rod, a trip finger connected with one of the movable elements and with which the actuator is adapted to engage, and means arranged partly on the engine and partly on the igniter and generator structure whereby the push rod and trip finger will be in proper relation to each other each time the igniter and generator structure is replaced after removal from the cylinder.

9. The combination of an engine cylinder, an igniter mounted thereon, a generator mounted on the igniter, means for operatively connecting the movable elements of the generator and igniter to move together, a trip finger connected with the said movable elements, an operating shaft, a push rod adapted to engage the trip finger, means for reciprocating the rod by the shaft, and means whereby the igniter and generator structure can be fastened in only one position where the push rod and trip finger are in proper relation to each other, said means comprising a part on the igniter and generator structure and a part on the engine with which the first part is detachably engaged.

10. The combination of an engine, an igniter mounted on the cylinder thereof, a bracket extending from the igniter, a generator on the bracket, means for operatively connecting the movable elements of the generator and igniter together, a trip finger connected with the movable elements, a push rod adapted to wipe on the trip finger, means for actuating the push rod, an arm extending from the bracket, a support on the arm for the trip rod, and means fixed on the engine with which the arm engages whereby the igniter can be replaced on the engine cylinder in only that position in which the trip finger and push rod are in proper relation.

11. The combination of an engine cylinder, an arm extending laterally from the head thereof, a shaft bearing in the arm, a push rod, and a crank pin connection between the shaft and push rod, with an igniter mounted on the engine cylinder and having its movable electrode operatively related to the push rod, an arm extending from the igniter, and means on the arm of the engine cylinder with which the first-mentioned arm detachably engages for permitting the igniter to be attached in only that position where the push rod and movable electrode are in proper relation, and means on the first-mentioned arm for movably supporting the push rod.

12. The combination of an engine cylinder, an igniter and current generator structure removably mounted thereon, the movable elements of the igniter and generator being operatively connected, a trip finger connected with such movable elements, an arm extending from the igniter, means fixed with respect to the engine cylinder for engagement with the arm whereby the said structure can be fastened in only one position on the cylinder, an actuating push rod arranged to engage the trip finger, means for reciprocating the push rod, and an adjustable support mounted on the arm and on which the push rod moves.

13. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

14. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

15. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

16. The combination of an igniter frame,

comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion motor, sparking electrodes mounted in said body, a magneto generator mounted on said base, means for actuating the said generator to generate current, means for actuating one of the electrodes, and means relatively fixed on said motor for engaging said laterally extending arm.

17. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion engine, sparking electrodes mounted in said body and adapted to make and break a circuit within the combustion chamber of the engine, a magneto generator mounted on said base, means for actuating the magneto generator to generate current, means for operating one of the lectrodes coöperatively with said generator, a member extensibly mounted in said laterally extending arm, and means secured in relatively fixed relation on the engine to engage said extensible member.

18. In combination, a magneto generator comprising a field magnet, a pair of pole pieces, inductive windings, and a rotor mounted on a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon the release, an igniter frame comprising a body and a shelf extending therefrom and supporting said generator, a stationary insulated electrode and a movable electrode mounted in said body, said movable electrode adapted to make contact with the other said electrode, an arm on said rotor shaft and adapted to coöperate with said arm on movable electrode to so oscillate the movable electrode as to make and break contact with said other electrode, a circuit connecting said windings to said electrodes, and an arm extending from said igniter frame and adapted to engage on a relatively fixed member on the engine associated with said frame.

19. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

20. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

21. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

22. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

23. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

24. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor

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for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

In witness whereof, I hereunto subscribe my name this 30th day of October, A. D. 1914.

EMIL PODLESAK.

Witnesses:
B. R. BECKWITH,
H. F. GEIST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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E. J. KANE.

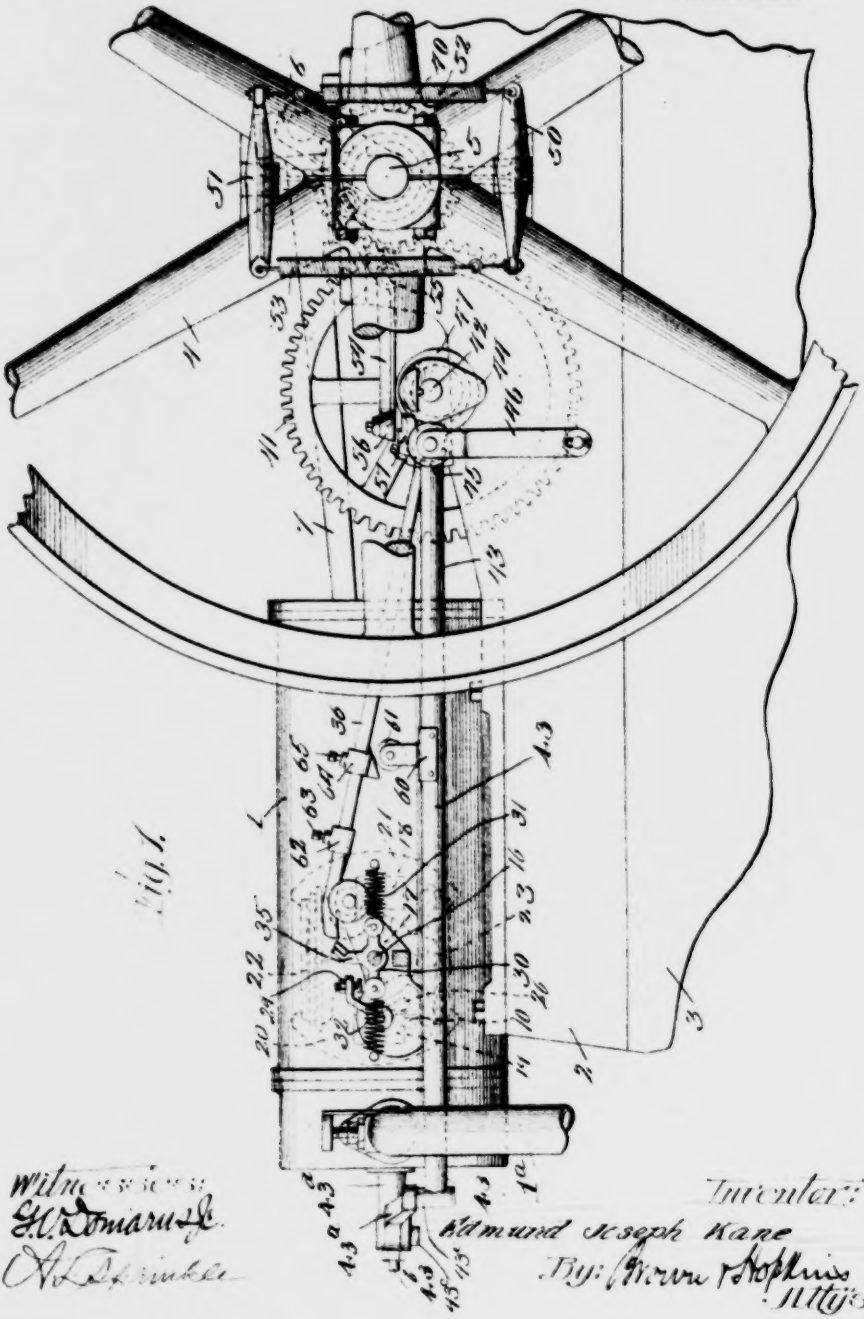
ELECTRIC IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED FEB. 2, 1910.

1,204,573.

Patented Nov. 14, 1916.

2 SHEETS—SHEET 1.



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ELECTRIC IGNITER FOR EXPLOSIVE ENGINES.

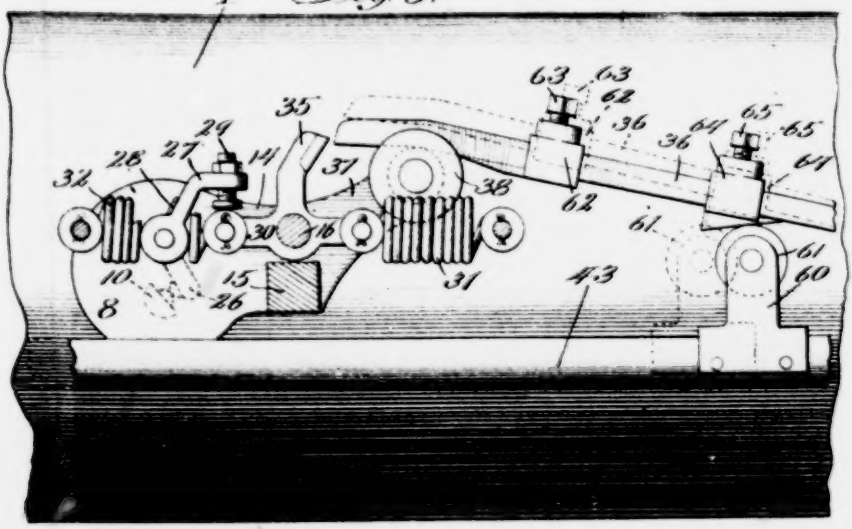
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1,204,573.

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2 SHEETS—SHEET 2.

Fig 3.



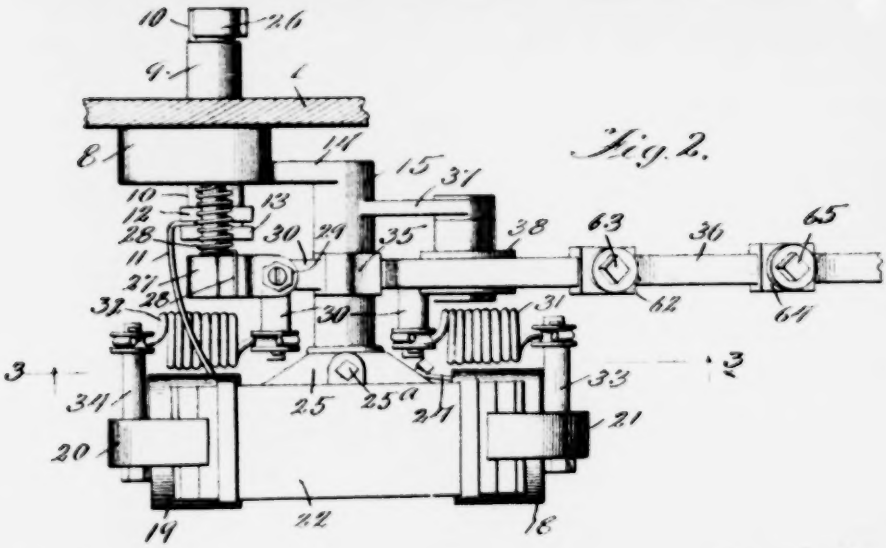


Fig. 2.

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UNITED STATES PATENT OFFICE.

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ELECTRIC IGNITER FOR EXPLOSIVE-ENGINES.

1,204,573. Specification of Letters Patent. Patented Nov. 14, 1916.

Application filed February 2, 1910. Serial No. 541,428.

To all whom it may concern:

Be it known that I, EDMUND JOSEPH KANE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Igniters for Explosive-Engines, of which the following is a full, clear, and exact specification.

The invention relates to improvements in electric-igniters for explosive engines.

The object of the invention is to provide an electric igniter mechanism with novel and improved means for producing the spark for firing the charge.

A further object of the invention is to provide in a device of the character described improved means by which when the exhaust valve is held open during the operation of the engine by the speed governor mechanism and no charge in the cylinder is to be exploded, the igniter mechanism is rendered inoperative and consequently the generator consisting of the oscillating or rotating armature or inductor remains idle and a spark is not produced and as a consequence the resulting wear upon the moving parts and the loss of energy required to generate a useless spark is avoided.

A further object of the invention is to provide in a device of the character described, direct and positively operating means for imparting movement to the oscillating armature or inductor, which preferably comprises the movable part of the generator.

To the attainment of these ends and the accomplishment of certain other new and useful objects, as hereinafter described, shown in the accompanying drawings forming a part of the specification, and finally pointed out more specifically in the appended claims, the invention is directed.

In the said drawings, Figure 1 is a side elevation of an explosive engine with the invention attached and having parts of the igniter mechanism shown in section and other parts shown in broken lines in order to more fully disclose the details of construction of the igniter mechanism and one manner of attaching the invention to an explosive engine. Fig. 2 is a detail an view of the igniter mechanism with the walls of the cylinder of the explosive engine to which it is attached in section. Fig. 3 is an enlarged detail view of the igniter parts similar to the view in Fig. 1, but showing in dotted lines the relative movements of the exhaust valve operating rod, and the igniter operating means by which the igniter mechanism or generator is rendered inoperative and a spark not produced when no charge is to be exploded in the cylinder because of the action of the speed governor through the exhaust valve operating means on the generator. This view is taken on line 3—3 of Fig. 2.

Similar characters of reference indicate similar parts throughout the several views.

1 is the engine cylinder, and 2 the main frame.

3 is the engine base.

4 is the fly-wheel on shaft 5 provided with a crank 6 operated by connecting rod 7 pivoted to the piston on the interior of the cylinder 1 in the usual or any desired manner.

The engine cylinder 1 is provided with the usual side opening adapted to receive the usual igniter block 8 which is provided with an inner extension 9 fitted through the opening and extending into the cylinder 1. In the horizontal opening through the block 8 extends a stationary electrode 10 which is preferably insulated from the igniter block 8 by suitable insulating material in the usual manner and not herein specifically shown, since it is the common practice to insulate the stationary electrode from the igniter block rather than the movable electrode. Outside the block 8 on the electrode 10 is provided means for the securement to the electrode 10 of the wire 11, such means preferably comprising a threaded outer end on the electrode 10 and the two threaded chamfered or polygonal nuts 12 and 13, between which one end of the wire 11 may be secured.

Secured to the igniter block 8 and preferably cast integral therewith is an arm 14 extending for a short distance approximately parallel with the outer wall of the cylinder 1 and provided at its forward extremity with the angular bearing portion 15 into which the shaft 16, on which is carried the armature or inductor, is journaled. The armature or inductor may be of any desired type as well as the construction of the field of the igniter but the preferred form is an armature or inductor of the form shown only in dotted lines as indicated by the ref-

erence character 17 in Fig. 1 of the drawings, which, although not specifically shown may consist of masses of laminated iron suitably joined together and of approximately the form shown in dotted lines in Fig. 1 and being mounted to oscillate with shaft 16, will, in a well known manner, produce rapid periodic reversals in the magnetic polarity of the cores 18 and 19 indicated in broken lines on Fig. 1 and will in a well known manner set up alternate currents in the coils surrounding them. The wound cores 18, 19 may consist of projections from the laminated iron plates indicated at 20, 21, which at their upper and lower extremities are joined by the magnet plates 22, 23.

While I have herein shown the invention applied to one specific form of generator or magneto and have to an extent shown and described the details of construction of such magneto or generator, it will be apparent that the invention may be applied by those skilled in the art to any type of magneto or generator whether of the oscillating type of armature or inductor or whether of the constantly rotating type of armature or inductor. It will also be apparent that the invention may equally be applied to magnetos or generators for furnishing electrical ignition whether the armature or moving part is of the wound type instead of the laminated metal or whether the field be of the ordinary form of winding.

The laminated cores 18, 19, may be wound in the manner common to this type, one end of the winding indicated by 24 being connected to the supporting block 25 in contact with sleeve 15 and secured thereto by set screw 25^a, which completes the circuit to the bearing block 8 and the movable electrode 26, which is also journaled in bearing block 8 and extends to the outside of the block, being provided at its outer extremity with the crank arm 27 and held normally in such position that the electrodes 10 and 26 are normally in contact with each other by means of the torsion spring 28, one end of which is secured to the igniter block 8 and the other end in engagement with the crank arm 27. The wire 11 already referred to as in contact with electrode 10 leads directly to the wound core 19, thus completing the electrical circuit. To the supporting block 25 is secured the laminated field members 20, 21, which carry the wound cores 18, 19. The end of the crank arm 27 on the movable electrode 26 is provided with an adjustable screw 29 provided with a lock nut and having a head at its lower extremity for engagement with the oscillating member 30, which is secured to rotate with the oscillating shaft 16 carrying the armature or inductor 17. The oscillating member 30 secured to the armature shaft 16 is provided with horizontally extending arms, the extremities of which are in engagement each with one end of coil springs 31, 32, which have their outer extremities secured to brackets 33, 34, extending laterally from the laminated field members 20, 21. The springs 31, 32 normally exert a tension on the oscillating member 30, thus holding the armature or inductor 17 in its normal position and offering elastic resistance to the rotation of the inductor or armature, which in order to rotate or oscillate must move with the oscillating member 30 through the medium of the armature shaft 16, to which both are secured. The oscillating member 30 is provided with a vertically extending projection or finger as indicated at 35 adapted for engagement by the reciprocating member 36 for the purpose of oscillating the armature or inductor 17 against the tension of springs 31, 32. The extension 15 carried on the igniter block 8 through the connecting portion 14 is provided with an extending branch as indicated at 37, the outer extremity of which carries a grooved roller or sheave 38, which serves as an anti-friction bearing and support for the reciprocating member 36, the free end of which adjacent the grooved roller or sheave 38 is adapted normally to engage the finger 35 to oscillate the armature or inductor. Reciprocating movement is imparted to the member 36 preferably from the crank shaft 5 of the engine, and a convenient way of accomplishing this purpose is to secure to crank shaft 5 a gear as indicated at 40, which meshing with the gear 41, is of suitable size to impart the desired speed to the igniter whatever the character of the engine.

In the present embodiment of the invention, as shown particularly in Fig. 1, the engine is of the single cylinder four-cycle type, the gears 40 and 41 being of proper proportions to impart the desired speed to the shaft 42 and gear 41 for operating the exhaust valve rod, as indicated at 43, which is accomplished by the action of the eccentric cam 44 keyed on shaft 42 and bearing against the anti-friction roller 45 carried at the upper extremity of the pivotal support 46 of the exhaust valve operating rod 43. The igniter operating member 36 may be operated from the shaft 42, which also carries the eccentric cam 44 in any desired manner, a convenient form being indicated in the drawings in Fig. 1 consisting of an eccentric secured to shaft 42 and carrying a strap 47 secured to the forward extremity of the igniter operating member 36.

It is well known in this art that means such as just described may be used for operating the exhaust valve operating rod and it is equally well known in explosive engines that centrifugal governors may be employed on moving parts of the engine in order to control the speed of the engine by

preventing the closing of the exhaust valve when the engine reaches or exceeds the given speed. In explosive engines of the type herein shown, the piston is employed as a pump for drawing the explosive material into the cylinder but when the exhaust valve of the engine is held open automatically the action of the piston within the cylinder in creating a vacuum will be to cause the air to rush into the cylinder when the exhaust valve is open, following the lines of least resistance, so that a charge will not be drawn into the cylinder when the exhaust valve is open and consequently there will be no explosion take place in the cylinder. Heretofore it has been the practice in the use of igniters to connect them up positively with the engine so that the igniter runs constantly with the engine and a spark is produced at each cycle of operation of the engine whether a charge of explosive has been drawn into the cylinder or not. If, therefore, the engine has reached or exceeded a given speed and the explosion has been cut out by reason of the action of the governor due to the excessive speed, no explosion can take place until the speed has been reduced to or below the given degree and yet the igniter mechanism must continue to operate and the spark is wasted together with the energy necessary to create it and the igniter mechanism has been subjected to the wear incident to such operation for no useful purpose. It is to obviate this condition of useless wear on the igniter mechanism that is one of the special purposes of this invention, as stated, and it is not important what specific means for governing the speed of the engine be employed but the common form of reciprocating exhaust valve operating rod has been shown as commonly operated on four-cycle engines and this is further shown under the control of an ordinary centrifugal governor comprising pivoted weighted members 50, 51, secured to the flywheel 4 or the crank shaft 5 of the engine and normally held in a given position by suitable springs 52, 53, which may be adjustable in order to vary their tension in a well known manner not necessary to describe for the purposes of illustrating the present invention. These spring controlled pivoted members 50, 51, may be connected with a suitable member slidably mounted on crank shaft 5, which preferably has an exterior cone shape and against which bears one end of the latch 54 which is pivoted at 55 on the main frame of the engine and has one end, as indicated at 56, adapted to engage with a notched member 57 on the exhaust valve operating rod 43. The usual operation of this form of governor is that, with the springs 52, 53 adjusted to have a given tension when the speed of the crank reaches or exceeds a given speed, the operation of the governor will cause the end 56 of the latch to be depressed so that it will engage the notched member 57 on the exhaust valve operating rod 43 and prevent the return of this rod when released by cam 44 and in this manner hold open the exhaust valve preventing further explosions of the engine because preventing the drawing in of a charge until the speed of the crank shaft falls below the given speed when the spring controlled members 50, 51 on the governor will act to release the exhaust valve operating rod and permit the exhaust valve to close, which will then cause the action of the piston to draw in a charge of explosive for the use of the engine.

It is obvious that even though the reciprocating member 36 which is shown as constantly operating from the crank shaft of the engine shall operate the igniter mechanism, the spark produced will be wasted if the exhaust valve is not closed so that a charge of explosive is provided within the cylinder. It is found by experience that it is very desirable to avoid all the wear and tear possible on the igniter mechanism. In order therefore that the igniter mechanism may be rendered inoperative and consequently no spark produced when there is no charge in the cylinder to be exploded by reason of the exhaust valve being automatically kept open due to the engine having passed a given speed and because of the governor control over the exhaust valve, I provide means for automatically stopping the operation of the igniter mechanism under the control of the exhaust valve operating means. In the present embodiment of the invention the exhaust valve being under the control of the exhaust valve operating rod 43 I secure to the rod 43, in any suitable manner, a support 60 carrying at its upper extremity a suitable anti-friction roller 61. In order that the igniter operating member 36 may be properly timed to release the spring controlled igniter mechanism, the rod 36 is provided with a wedge block 62 adjustably secured thereto by set screw 63. By this means the timing of the igniter mechanism is secured. Another wedge block similar to the block 62 but having its inclined face in the opposite direction is also adjustably secured on the igniter operating member 36, as indicated at 64, and this member is adjustably secured to the member 36 by set screw 65. The operation of the exhaust valve cut out in its relation to the igniter mechanism is best seen from an inspection of the parts depicting the exhaust valve operating rod 43 and the igniter operating member 36 at the extremes of their movements as indicated by the full and dotted lines representing those parts, as shown in Fig. 3.

The operation of the mechanism or as

much thereof as pertains to the features of novelty herein described and claimed is as follows: The operator, desiring to start the engine, may turn the same in the usual manner, thus drawing in the charge of explosive into the cylinder. The operation of starting the engine will also impart movement to the igniter or generator operating member 36 through the gears 40 and 41, the shaft 42 and the eccentric secured thereto which operates the member 36. The movement of the member 36 causes its extremity adjacent the igniter mechanism to engage the upwardly extending arm 35 near its upper extremity and thus rotate the member 30, the shaft 16 and the armature or inductor of the generator carried thereon against the tension of springs 31, 32. This rotation or oscillation of the inductor or armature of the generator wil cause a current to be generated which will pass through the electrodes 10 and 26 in the circuit already described. The adjustable wedge block 62 under control of set screw 63 on the igniter operating member 36 may be adjusted so that the forward end of the member 36 will become disengaged from the arm 35 on the oscillating member 30 at the time the current passing through the electrodes 10 and 26 is near its maximum strength. The sudden release of the oscillating member 30 being under the control of the springs 31, 32 will cause it to be returned to normal position, as shown in all of the figures, under considerable momentum which will carry the inductor or armature of the generator, the shaft 16 and the oscillating member 30 beyond the normal position and will cause the extremity of the oscillating member 30 adjacent the crank arm 27 to strike the adjustable screw-threaded member 29. This will rotate the crank arm 27 against the action of spring 28 and will at the same time separate the movable electrode 26 from the stationary electrode 10. The current being at about its maximum strength, as stated, a spark will then pass between the electrodes 10 and 26.

The engine having reached or passed a given speed by reason of which the governor mechanism has locked the exhaust valve operating rod 43 against closing the exhaust valve, the support 60 on the exhaust valve operating rod 43 will be carried to the position indicated in dotted lines in Fig. 3 by which the antifriction roller 61 carried thereby will pass under the adjustable wedge block 64 and operate the igniter operating member 36 to the position indicated in dotted lines also in Fig. 3. In this position it will be seen that although the igniter operating member 36 continues to operate it will be held in a position where its operation will not affect the igniter mechanism or generator which will remain inactive until the exhaust valve operating rod 43 is returned to normal.

By means of the mechanism as described it will be seen that the igniter mechanism or generator including the spring controlled oscillating member 30, the armature shaft 16 together with the armature 17 and the movable electrode will all be cut out and remain inactive at all times when the engine is running above normal speed and it is not desired to ignite a charge in the cylinder. It will also be seen that the arrangement of the parts as described for operating the oscillating form of igniter or generator herein shown is exceedingly simple and direct and that by directly operating the oscillating means controlling the armature or inductor through the medium of the reciprocating member 36 I provide an exceedingly simple and durable mechanism that is certain in its operation and not liable to get out of order, and furthermore the movable parts of the igniter being rendered inactive at all times when the exhaust valve is open, there is no useless current generated in the igniter as is the case with the igniters positively operated from the crank shaft of the engine without means for cutting out the operation of the igniter mechanism under the control of the exhaust valve operating means or the speed governor.

In order that the invention might be fully understood the details of the preferred embodiment thereof have been thus specifically described but it is not desired to be limited to the exact details of construction thereof, for it will be apparent that many modifications may be made by those skilled in the art without departing from the purpose and spirit of the invention, and what I claim is—

1. In an explosive engine, the combination with a magneto, of means for operating the magneto by the running of the engine, a speed governor operated by the engine, and means under the control of the speed governor for rendering the magneto operating means inoperative when the engine passes or exceeds a predetermined speed.

2. The combination in an explosive engine having a speed governor, and an exhaust valve operating rod operatively connected with the speed governor, of a magneto, means for operating the magneto by the running of the engine, and means adapted to be operated by the movement of the exhaust valve operating rod for rendering the magneto operating means inoperative.

3. In combination with an internal combustion engine, a speed governor associated with the engine and operatively connected therewith, ignition mechanism for said engine comprising make and break spark electrodes and a magneto, means operated by the engine for effecting the operation of both the magneto and spark electrodes in

timed relation one to the other, and mechanism controlled by said speed governor for rendering said engine operated means incapable of effecting the operation of the magneto and spark electrodes whenever the engine passes or exceeds a certain predetermined speed.

4. An internal combustion engine of the hit and miss type having an exhaust valve, an exhaust valve operating rod and a speed governor in operative relation to said exhaust valve operating rod arranged to shift the latter to hold the exhaust valve in open position whenever the engine exceeds a certain predetermined speed, in combination with an igniter comprising make and break electrodes, a magneto for supplying ignition current to said igniter, a reciprocating push rod driven by the engine for effecting actuation of the magneto and igniter electrodes together with means operated by the exhaust valve operating rod for rendering the reciprocating push rod incapable of actuating the magneto and igniter electrodes whenever, when the engine exceeds a certain predetermined speed, the exhaust valve operating rod and the governor coöperate to hold the exhaust valve in open position, as aforesaid.

5. In combination with an internal combustion engine, a speed governor driven from the engine, ignition mechanism for said engine comprising an igniter and a magneto for supplying ignition current to said igniter, actuating mechanism driven by the engine for effecting the operation of the magneto, and devices controlled by the speed governor for rendering said actuating mechanism incapable of effecting the operation of the magneto whenever the engine passes or exceeds a certain predetermined speed.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 22nd day of January, A. D. 1910.

EDMUND JOSEPH KANE.

Witnesses:

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IGNITING MECHANISM FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED OCT. 1, 1914.

1,236,790.

Patented Aug. 14, 1917.

Fig. 1.

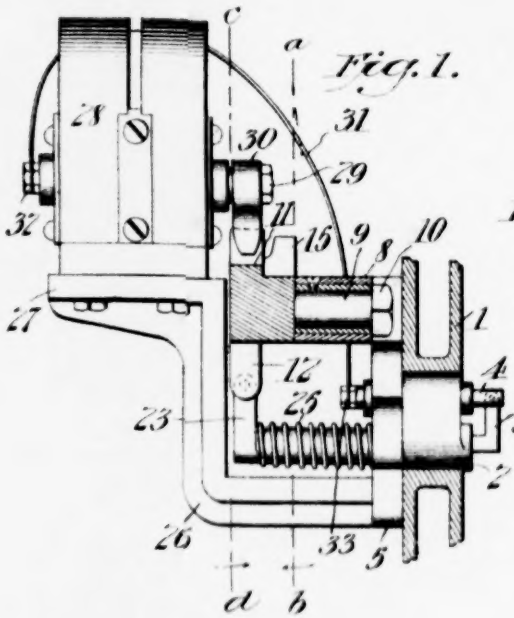


Fig. 2.

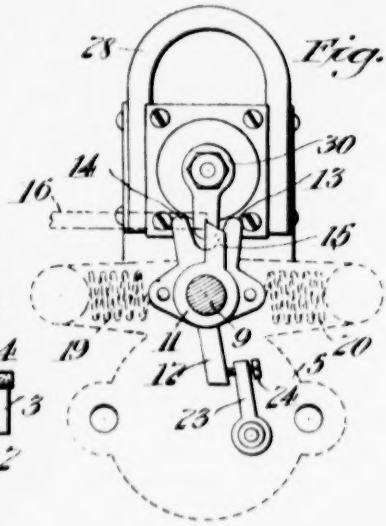


Fig. 3.

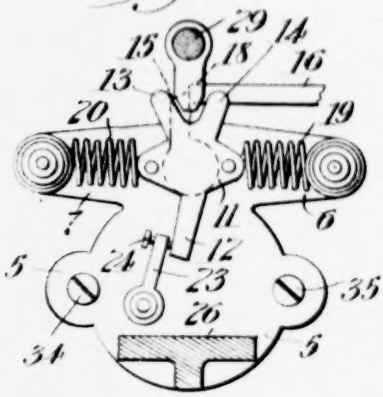
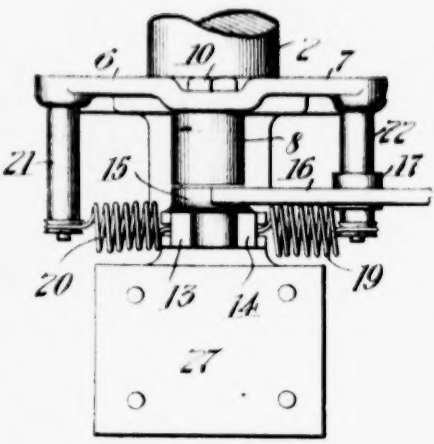


Fig. 4.



Witnesses

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IGNITING MECHANISM FOR INTERNAL-COMBUSTION ENGINES.

1,236,790. Specification of Letters Patent. **Patented Aug. 14, 1917.**

Application filed October 1, 1914. Serial No. 864,447.

To all whom it may concern:

Be it known that I, HARRY RANDOLPH VAN DEVENTER, a citizen of the United States, residing at Sumter, in the county of Sumter and State of South Carolina, have invented certain new and useful Improvements in Igniting Mechanism for Internal-Combustion Engines, of which the following is a specification, reference being had to the accompanying drawing.

This invention relates to igniters of the make-and-break type, and has for its purpose the provision of an igniter bracket upon which magneto may be mounted, the magneto armature or rotor being oscillated by means of suitable mechanism carried upon the igniter bracket.

A further object is to provide a bracket adapted to be mounted on an engine, and carrying the engine igniter and the magneto, and all of the operating means therefor, the operating means being so disposed in regard to the engine push rod or other actuating device, that the magneto may be removed without interfering in any way with the operation of the igniter proper, thus permitting battery to be connected to the igniter in the event of any trouble with the magneto.

Another object is to provide a combined igniter and magneto mounting having a flange adapted to be secured to the engine cylinder by suitable means, and carrying on this flange suitable spring means for oscillating both the magneto and the igniter.

Figure 1 is a side view, partly sectional, of my invention. Fig. 2 is a view of same looking toward the end of the magneto on the line *a*, *b*, Fig. 1, and showing diagrammatically the arrangement of the various parts. Fig. 3 is a diagram looking toward the igniter on the line *c*, *d*, Fig. 1 and showing the shape of the igniter flange casting. Fig. 4, a view looking down on the mechanism with the magneto removed. Like figures of reference denote the same parts wherever they are shown.

1 denotes the wall of the engine cylinder. Fitted into this in the usual manner such as the bolts 34, 35 is the igniter body 2 carrying the movable contact 3 and fixed contact 4 constituting the usual make-and-break igniter mechanism. A flange 5 projects around the aperture in the cylinder, and projecting from this flange and preferably integral therewith are the arms 6 and 7, and the boss 8, the latter forming a bearing for the shaft 9 which is secured in the bearing in any suitable manner, such as the screw 10. On the outer end of shaft 9 is fastened the trip lever 11, which is provided with a projecting igniter trip finger 12, and two upwardly projecting magneto fingers 13 and 14. There is also an engine trip 15, adapted to be engaged by the push rod 16, the outer end of said rod being suitably connected to some moving part of the engine so that the rod has a reciprocating motion over the small pulley 17, which causes the inner end of the rod 18 to push inwardly against 15 until 15 rides under it. Such a trip motion is now commonly used in connection with make-and-break igniters.

Attached to the trip lever 11 are suitable springs 19 and 20 which cause the trip lever to occupy normally the position shown in the drawings. These springs are supported on suitable studs 21 and 22 on the ends of the arms 6 and 7.

The movable contact 3 of the igniter extends outwardly through the flange 5, and carries at its outer end an arm 23 having suitable adjusting means such as screw 24, whereby the relative positions of 23 and the igniter trip finger 12 may be adjusted. This is occasioned by the necessity, when some magnetos are used, of having the igniter contacts closed; while again, when battery is used, it is preferable to have igniter contacts normally open.

A spring or any other suitable means 25 may be employed to hold the contacts of the igniter together, or arm 23 in contact with igniter trip finger 12, which would leave the contacts normally open.

Projecting from the flange 5 and preferably integral therewith, is a bracket arm 26 forming at its upper end the support 27, upon which may be mounted any suitable magneto 28. The shaft 29 of the magneto carries a dog 30 the lower end of which is positioned between magneto fingers 13 and 14 of the trip lever. A suitable connection 31 is made between the circuit terminal 32 of the magneto, and the binding post 33 on the outer end of the fixed contact 4 of the

igniter, this fixed contact being suitably insulated from the frame or body 2.

Presuming the magneto to be of the alternating current type the armature or rotor of same is so set in relation with the dog 30 that when the dog is moved to the left, Fig. 3, and suddenly released, that the peak of the current wave produced by the movement of the armature will occur at the same time the igniter points in the cylinder separate. This is accomplished by the push rod 16 engaging the trip 15 thereby pushing the trip lever to one side which causes 15 to slip off the end 18 of 16. When this occurs springs 19 and 20 cause a quick return of the trip lever to its normal or central position, and the fingers 13 and 14 cause a corresponding rapid movement of the dog 30 thereby actuating the magneto: At the same time the igniter trip finger 12 strikes arm 23 causing the separation of the igniter contacts in the cylinder thereby producing a spark.

If for any reason it is desired to remove the magneto, it may be unbolted from the support 27 and the connection 31 removed from the binding post 33. Any other suitable current source may now be connected to 33 and the engine operated without the magneto, as the parts that operate the igniter have not been disturbed.

I am aware that it is old to use an oscillating magneto mounted on a bracket integral with the igniter flange 5, but in all such arrangements the springs 19 and 20 and the trip lever 11 are mounted on the magneto and form part of same. This being the case it is obvious that the removal of the magneto from the bracket removes the means by which the igniter arm 23 or its equivalent is operated, and therefore the engine cannot be used until the magneto is replaced. This is very inconvenient in cases of magneto trouble, and makes it necessary on engines having this type of combined igniter and magneto, to provide a separate igniter mechanism, so that when it is necessary to use some other source of ignition than the magneto, this special igniter mechanism may be put on the engine. In such igniters the arm 23 or its equivalent is operated directly by the push rod 16.

My invention therefore consists broadly of mounting the trip lever and springs on the igniter casting which renders a special igniter unnecessary in case the magneto is removed; and while I have shown a single casting comprising the igniter body, the arms for supporting the springs and trip lever, and a support for the magneto, I desire to have it understood that the arrangement shown is merely illustrative, as these parts may consist of different pieces suitably fastened together. Other changes may be made as are within the scope of the appended claims.

Having thus described my invention, I claim:

1. In an ignition device, an igniter body having a flanged portion adapted to be secured to an engine cylinder, a projection on said body, a trip lever, a support for said trip lever mounted on said projection, a fixed and a movable electrode carried on the igniter body in position to enter the combustion chamber of the engine cylinder when in place, actuating means for said movable electrode extending through the igniter body into operative relation with the trip lever, a part of said trip lever adapted to be engaged and moved by a moving part of the engine, and spring means for returning the trip lever and operating the said movable electrode after initial actuation by the engine part, all in combination with a magneto removably supported by said projection and detachable connecting means between the rotor of said magneto and said trip lever.

2. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, a trip lever between said arms, spring means carried on the flange of said igniter tending to normally hold the rotor in a given position, spring means of less tension than the first mentioned means and operating on the first mentioned arm to hold the same in engagement with the trip lever, and means for actuating the trip lever.

3. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a spring connected with the arm, a generator having a rotor, an arm on the rotor, a trip lever operable independently of said generator, a push rod for operating said trip lever, and springs holding said trip lever in a predetermined position, whereby said generator with its operating arm may be removed from the action of said trip lever without affecting the action of same in relation to said movable electrode, substantially as described.

4. An ignition device comprising a casting supporting a suitable generator, a make-and-break igniter and spring controlled means for operating said generator and igniter, and a loose coupling between said spring controlled means and said generator whereby the generator may be removed or replaced in relation to said operating means without affecting the operation of the latter, substantially as described.

5. An ignition device comprising a body portion carrying igniter mechanism, a flange on said body whereby same may be supported on an engine, means projecting from said flange for operating said igniter mechanism, a trip lever supported by said flange, anchor posts carried by the flange

and positioned at opposite sides of the trip lever, tension means between said posts and trip lever, and means between said trip lever and igniter mechanism whereby said mechanism may be operated by said tension means.

6. An ignition device comprising a body portion carrying igniter mechanism, a flange on said body whereby same may be supported on an engine, means projecting from said flange for operating said igniter mechanism, a trip lever, anchor posts carried by the flange and positioned at opposite sides of the trip lever, tension means between said post and trip lever, a generator, and means between said generator, igniter operating means, and trip lever whereby said generator and igniter mechanism may be operated by the action of said tension means.

7. An ignition device for internal combustion engines comprising an igniter body carrying a mechanically operated igniter contact adapted to be mounted on an engine with the igniter contact projecting into the combustion chamber thereof, a trip lever mounted on the igniter body in operative relation to the said mechanically operated igniter, and a retractile spring connection between said trip lever and said igniter body, together with means for removably supporting a magneto in operative relation to the trip lever comprising a bracket carried by the igniter body, and means for transmitting motion from the trip lever to the magneto.

8. An ignition device for internal combustion engines comprising an igniter body carrying a mechanically operated igniter contact and adapted to be mounted on an engine cylinder with the igniter contact within the combustion chamber thereof, a magneto, a trip lever, tension means connecting said trip lever with the igniter body independent of the magneto, and means for transmitting motion from the trip lever to each of said igniter contact and said magneto.

9. An ignition device for internal combustion engines comprising an igniter body carrying a movable igniter contact and adapted to be mounted on an engine cylinder with the igniter contact projecting into the combustion chamber thereof, a trip lever and retractile means therefor mounted on the igniter body in operative connection with said movable igniter contact, a bracket carried by the igniter body for removably supporting a magneto, and loose coupling means for operatively connecting said trip lever with a magneto when supported on said bracket.

10. An ignition device for internal combustion engines comprising an igniter body carrying a movable igniter contact and adapted to be mounted on an engine with the igniter contact projecting into the combustion chamber of the engine, a bracket carried by the igniter body, a magneto removably mounted on said bracket, a trip lever and retractile means therefor mounted on the igniter body and operable independently of said magneto, means for transmitting motion from said trip lever to the movable igniter contact, and a loose coupling between said magneto and the trip lever carried partly by the magneto and partly by the trip lever.

11. An ignition device for internal combustion engines comprising an igniter body adapted to be mounted on an engine, a bearing in said igniter body carrying a movable igniter contact so positioned as to project into the ignition chamber of an engine when the said body is mounted thereon, another bearing on said igniter body carrying a trip lever, a magneto mounted on the igniter body, an operating shaft for said magneto mounted in bearings distinct from said first mentioned bearings, and means for transmitting motion from said trip lever to each of said igniter contact and said operating shaft.

12. An ignition device for internal combustion engines comprising an igniter body carrying a movable electrode and adapted to be mounted on an engine with the igniter contact projecting into the combustion chamber thereof, a trip lever, a magneto and an operating shaft therefor, separate and independent bearings for the movable electrode, the trip lever, and the magneto shaft, and means for transmitting motion from said trip lever both ways to the movable electrode and the magneto shaft.

13. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, an igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said member, and devices for removably supporting the magneto to the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

14. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, an igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being detachably connected with said member, and

devices for removably supporting the magneto from the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

15. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, an igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and field magnet, the rotor being operatively connected with said member, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

16. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said member, and devices for removably supporting the magneto from the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

17. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said member, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

18. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being detachably connected with said member, and devices for removably supporting the magneto from the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

19. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being detachably connected with said member, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

20. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, an igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the oscillatory member in a given position, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said member, and devices for removably supporting the magneto from the bracket, said igniter being controlled by the oscillatory member whereby the igniter may be operated without the magneto.

21. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, an igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the oscillatory member in a given position, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said member, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being controlled by the oscillatory member, whereby the igniter may be operated without the magneto.

22. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the oscillatory member in a given position, a magneto consisting of a rotor and field magnet, the rotor being operatively connected with said member, and devices for removably supporting the magneto from the bracket said igniter being controlled by the

oscillatory member, whereby the igniter may be operated without the magneto.

23. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the oscillatory member in a given position, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said member, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being controlled by the oscillatory member, whereby the igniter may be operated without the magneto.

24. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, an igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the oscillatory member in a given position, a magneto consisting of a rotor and a field magnet, the rotor being detachably connected with said member, and devices for removably supporting the magneto from the bracket, said igniter being controlled by the oscillatory member, whereby the igniter may be operated without the magneto.

25. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the oscillatory member in a given position, a magneto consisting of a rotor and a field magnet, the rotor being detachably connected with said member, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being controlled by the oscillatory member, whereby the igniter may be operated without the magneto.

26. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an oscillatory member mounted on the bracket, means driven by the engine for operating said member, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the oscillatory member in a given position, a magneto consisting of a rotor and a field magnet, the rotor being detachably connected with said member, and devices for removably supporting the magneto from the bracket, said igniter being controlled by the oscillatory member, whereby the igniter may be operated without the magneto.

27. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, an igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said shaft, and devices for removably supporting the magneto from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

28. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, an igniter, carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said shaft, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

29. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and field magnet, the rotor being operatively connected with said shaft, and devices for removably supporting the magnet from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

30. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said shaft, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

31. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, an igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the shaft in a given position, a magneto consisting of a rotor and a field magnet, the rotor being opegatively connected with said shaft, and devices for removably supporting the magneto from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

32. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, an igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the shaft in a given position, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said shaft, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

33. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the shaft in a given position, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said shaft, and devices for removably supporting the magneto from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

34. A device of the class described, comprising a bracket adapted to be secured to an internal combustion engine, an operating shaft journaled in the bracket, means driven by the engine for operating the shaft, a make and break igniter carried by the bracket and disposed within the combustion chamber of the engine, spring means carried by the bracket tending to hold the shaft in a given position, a magneto consisting of a rotor and a field magnet, the rotor being operatively connected with said shaft, and devices for removably supporting the field magnet of the magneto from the bracket, said igniter being actuated by said shaft, whereby the igniter may be operated without the magneto.

35. In an ignition device, an igniter with fixed and movable electrodes, a bracket, a magneto supported on said bracket, operating means for said magneto adapted to be actuated intermittently by a moving part of an engine to which the igniter is attached, a pair of horns or posts secured to the said bracket, and spring means extending from said horns or posts normally tending to maintain the movable member of the magneto in a fixed and determinate position and to return the same thereto when actuated by said movable engine part.

36. In an ignition device, an igniter with fixed and movable electrodes, a bracket, a magneto detachably supported on said bracket, operating means for said magneto adapted to be actuated intermittently by a moving part of an engine to which the igniter is attached, a pair of horns or posts secured to the said bracket, and spring means extending from said horns or posts normally tending to maintain the movable member of the magneto in a fixed and determinate position and to return the same thereto when actuated by said movable engine part.

37. In ignition apparatus, an igniter body carrying fixed and movable electrodes, a bracket secured to said body, a magneto generator detachably supported on the bracket, and operating means for the movable electrode of the igniter adapted to be actuated by a moving part of the engine, and to be alternatively connected so as to operate the movable electrode and magneto simultaneously for magneto ignition, or the movable electrode without the magneto, for battery ignition.

38. In combination, a bracket adapted to be secured to an engine cylinder, a movable electrode journaled in said bracket and adapted to project within the engine cylinder, a magneto removably supported by said bracket, spring actuated means for oscillating the electrode and the rotor of the magneto, said means being arranged to maintain operative relation with the electrode, when the magneto is removed.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

HARRY RANDOLPH VAN DEVENTER.

Witnesses:
EDNA ISLER,
E. H. RHAME.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

E. J. KANE.

ELECTRIC IGNITER.

APPLICATION FILED JAN. 14, 1915.

1,280,105.

Patented Sept. 24, 1918.

Fig. 1.

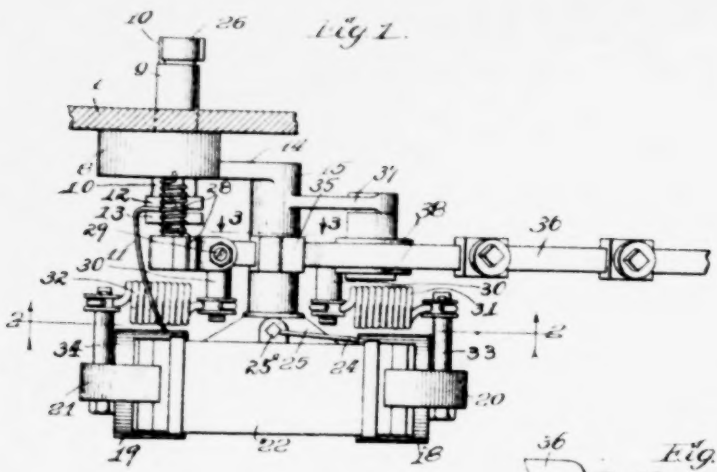


Fig. 3.

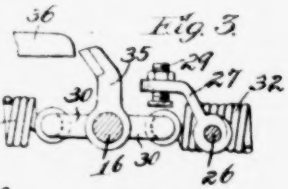
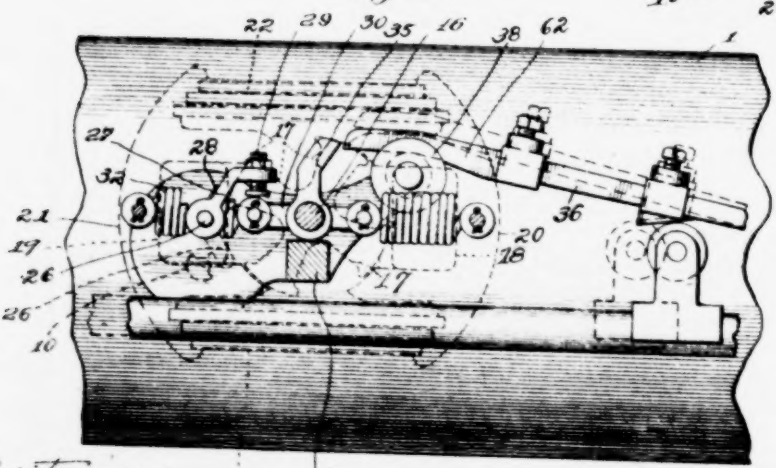


Fig. 2.



Witnesses:

R. F. Farrington

D. Colson.

Inventor

Edmund Joseph Kane

By Brown Wilson Hubbell & Fitzgerald

Attys.

UNITED STATES PATENT OFFICE.

EDMUND JOSEPH KANE, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WEBSTER ELECTRIC COMPANY, OF RACINE, WISCONSIN, A CORPORATION OF WISCONSIN.

ELECTRIC IGNITER.

1,280,105. Specification of Letters Patent. Patented Sept. 24, 1918.

Original application filed February 2, 1910, Serial No. 541,428. (Patent No. 1,204,573.) Divided and this application filed January 14, 1915. Serial No. 2,097.

To all whom it may concern:

Be it known that I, EDMUND JOSEPH KANE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Igniters, of which the following is a specification.

My invention relates to magneto generators for ignition systems of explosive engines, and this application is a division of my prior application for electric igniters for explosive engines, filed February 2, 1910, Serial Number 541,428.

The object of my invention is to provide a simple and efficient device of the character mentioned. A further object is to reduce wear and hammering of the electrical make-and-break contacts, and other parts of the generator.

My improvement consists in substantially the combination and arrangement of parts hereinafter described, shown in the accompanying drawing forming a part of this specification, and more particularly specified in the subjoined claims.

In the drawing:

Figure 1 is a top view of a magneto generator, shown as attached to fragments of an explosive engine, and embodying my invention.

Fig. 2 is a section taken on line 2—2 of Fig. 1, but showing a larger portion of the cylinder of the engine than in Fig. 1, and showing parts of the magneto cut away in broken lines, and

Fig. 3 is a fragmentary view of a portion of the device taken as on line 3—3, in Fig. 1.

My invention is particularly adaptable to the type of magneto generators employing an oscillatory armature or inductor, and in connection with the make-and-break type of ignition systems.

In the drawing, an explosive engine 1, fragments of which are shown, is provided with a suitable opening for the ignition points of a make-and-break system, and around this opening, on the outer side of the cylinder wall, is an ignition block 8, provided with an extension 9 extending through said opening into the cylinder. At the inner end of the extension 9 is carried the fixed contact 10 of the make-and-break system. The electrode 10 is mounted in block 8 and insulated therefrom in the usual manner, such insulation not being shown. At the outer end of the contact member 10 is secured a conductor wire 11, between nuts 12 and 13.

On block 8 is an arm 14 having a bearing member 15 at its outer end. In the bearing member is journaled a shaft 16, which carries the armature or inductor 17. The inductor 17 rotates between the field-cores 18 and 19. The cores 18 and 19 are provided with suitable electrical windings and formed on the pole pieces 20 and 21, and the latter are joined by fixed magnets 22 and 23. The pole pieces 20 and 21 are carried on supporting block 25 which is secured by set screw 25^b to the bearing member or bracket on or in which the magneto generator is mounted, thus rendering the magneto generator proper, detachable from its firm supporting base, shelf or bracket formed integrally with ignition block or plug 8 as described.

One end of the conductor 11 is connected to or is part of the winding on pole-core 19, and the latter is connected to the winding on pole-core 18 in the usual manner, and is not specifically shown. The other end 24 of the winding on pole-core 18 is secured to the supporting block 25 at the set screw 25^a or other suitable fastening means to ground the circuit in the framework of the magneto. A movable contact 26 is adapted to coöperate with fixed contact 10, and is provided with a portion extending through block 8, and in electrical contact therewith. On the outer end of the portion 26 which extends through and beyond block 8 is fixed an arm 27, and on the extended portion of part 26 is mounted a torsion spring 28 with one end engaging block 8, and the other end engaging arm 27 in a manner to cause contacts 26 and 10 to normally remain in contact. In the free end of arm 27 is threaded an anvil 29. The anvil 29 is adjustably mounted in the free end of arm 27, so that timing of the engine may be varied slightly by such adjustments.

Secured on the shaft 16 is a yoke member 30, having two arms extending in opposite directions from shaft 16, with one of the arms 30 positioned at one end of anvil 29, and adapted, upon oscillation of shaft 16, to cause movement of the anvil to open the con-

tacts 26—10, as will be described later. The arms of member 30 are provided with lateral extensions which are connected to tension springs 31 and 32, said springs being secured at their other ends to brackets 33 and 34 on pole pieces 20 and 21, so that the tension of springs 31 and 32 normally maintains the arm member 30 in a position so that one of its arms is in striking relation to the anvil 29, the position of the anvil varying obviously with its described adjustment. On the member 30 is an actuating arm 35 adapted to be engaged by a plunger 36. The plunger 36 is actuated from the crank shaft of the engine, not shown. The end of plunger rod 36 which engages arm 35 is mounted on a flanged roller 38, and the latter journaled on an arm 37 formed on bearing member 15. The plunger 36 is provided with a wedged member or inclined cam surface on member 62, so that upon longitudinal movement of the plunger, the latter will engage arm 35 to oscillate member 30 and arm 35, and after riding on the cam surface will be raised from the arm 35, permitting springs 31 and 32 to restore member 30 to its normal position. Owing to the elasticity of springs 31 and 32 and the momentum of member 30, the latter will be carried slightly past its normal position, and engage anvil 29 and rock contact member 26 away from contact 10 to open the electric circuit. This opening of the circuit produces the spark for igniting the engine.

By referring to the preferred embodiment of my invention as depicted in the drawing it will be seen that the single spring 28 is, due to the manner of its connection with the movable electrode shaft and the igniter block 8, of the torsional class of springs, while the multiple springs 31, 32, acting cumulatively upon the oscillating yoke member, 30 are tension springs exerting their combined elastic resistance to tension upon yoke member 30 whenever it is oscillated from its normal position of rest. Furthermore, while torsion spring 28 is shown formed of a much smaller grade of spring wire than the multiple tension springs 31, 32, it will also be obvious that its relative tensional relation to the combined springs 31, 32 will be greatly diminished by the system of leverages disclosed in the drawings of these associated parts. For example, torsion spring 28 must exert its reaction upon anvil lever 27 at a point relatively close to the fulcrum of this lever while the combined tension of springs 31 and 32 is exerted upon the outer extremities of yoke 30, one of which parts also forms the striker and comes in direct contact with the anvil 29 on arm 27, so that there is no loss of the reacting power of this pair of springs. This multiplies the effectiveness of springs 31, 32 over the torsion spring 28 many times, with the result that in the combination of these elements shown in the drawing the reaction of the combined rotor springs is controlling, and when the momentum of the rotor carries it over center obviously the less effectively arranged single spring 28 will yield allowing the igniter points to separate, but closing them quickly when the rebounding effect of the rotor yoke is withdrawn.

In practice, I prefer to adjust the anvil 29, which as shown in the drawings, is of an old and well known form to those skilled in this art, in relation to movable electrode arm 27 and the striking part of the yoke 30, so that when the yoke is at rest it will not influence the position of the movable electrode arm 27 with the result that normally the electrode points will be in contact, which, as well known to those skilled in this art, is desirable in keeping the contact points of the electrodes free from deposits of carbon or other substances on the interior of the engine cylinder that may interfere with the free discharge of the ignition spark between the contacts. An obvious adjustment, however, of anvil 29 to precisely close the normal gap between it and yoke 30, as shown, for example in Figs. 2 and 3, will not change the described mode of operation of the igniter points, but if the anvil be still further adjusted toward the yoke after the gap disappears, obviously the anvil 27 will rest normally in contact with the yoke and the igniter points will be normally separated by the increased leverage of springs 31, 32 over spring 28, to be closed momentarily when the rotor yoke is rocked or cocked away from it and afterward quickly separated by the rebound impact of the yoke on its release from operating plunger 36.

The portion of member 30 which engages the bottom of anvil 29 is preferably rounded or curved, in order to effect uniform movement of the arm 27 during the time the member 30 is in contact with anvil 29. The field pieces and inductor are not shown in detail, since their specific parts are not part of this invention. Any suitable field pieces or inductor may be used, as desired.

While I have illustrated and described the preferred form of my invention, I do not desire to be limited to the precise details and arrangement set forth, but desire to avail myself of such variations and changes as may come within the scope of the appended claims.

I claim:

1. In combination, a field magnet, an inductor mounted upon a shaft for oscillation relative to the field magnet, a yoke mounted upon the shaft for oscillation with the inductor, an operating arm carried by the yoke, a reciprocating member driven by an internal combustion engine to engage the operating arm to swing the yoke in one direction, means for disengaging the recipro

permit the oscillating parts to return to their normal position, spring mechanism connected with the diametrically opposite arms of the yoke, to return it to the normal position when relieved of the pressure of the reciprocating member, a curved cam surface on one arm of the yoke, a fixed electrical contact and a swinging electrical contact in the combustion chamber of the internal combustion engine, a spindle upon which the swinging contact is mounted, a push finger mounted upon the contact and spindle and carrying an anvil normally disengaged from the cam surface of the yoke but adapted to be engaged by the cam surface upon the overthrow of the oscillating yoke to separate the electrical contacts, and a light spring acting to bring the swinging contact and the push finger into their normal positions.

2. In a device of the class described, a suitable field magnet, an inductor adapted for oscillating with respect to the field magnet, a yoke rigidly connected with the inductor and having projections at diametrically opposite points, main actuating springs connecting the projections of the yoke with suitable stationary projections on the frame, the said actuating springs tending always to return the oscillating members to their normal positions, a pair of electrical contacts in the combustion chamber of an internal combustion engine, a light spring tending to maintain the closure of said electrical contacts, a push finger adapted when struck to separate the electrical contacts against the tension of the light spring, a curved cam surface on the yoke adapted to engage the push finger upon the overthrow of the yoke when returned to its normal position by the main actuating springs, an operating arm associated with the yoke, and reciprocating mechanism driven by the internal combustion engine to engage the operating arm to swing the yoke and the inductor out of their normal position.

3. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation within the field magnet, a pair of main actuating springs, each connected at one end with the field magnet frame, an integral yoke member rigidly connected with the inductor, the main actuating springs being connected at their free ends with the said yoke member, an operating arm constituting a part of the integral yoke member and adapted to be engaged by a reciprocating member driven by an internal combustion engine, separable contact points within the combustion chamber of the internal combustion engine, a light spring tending to maintain the closure of the electrical contacts, and mechanism adapted to be engaged by a cam surface on said contacts in opposition to the tension of the said light spring.

4. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation therein, spring mechanism tending to return the inductor to its normal position when moved out of said normal position, an operating arm for turning the inductor out of its normal position, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod being adapted normally to engage the end of the inductor-operating arm, means for shifting the path of travel of the reciprocating rod to determine its engagement with the operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and a member fixed relative to the inductor adapted to effect the operation of said contacts to create an ignition spark within the combustion chamber of the engine.

5. In a device of the class described, a field magnet, an inductor mounted for oscillation therein, an operating arm for said inductor, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod adapted normally to engage the end of the inductor-operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and an impact member fixed relatively to the inductor adapted to separate said contacts to create a spark in the combustion chamber.

6. In a device of the class described, a field magnet, a shaft, an inductor mounted upon the shaft for oscillation relative to the field magnet, a yoke mounted upon said shaft for oscillation with said inductor, springs tending to retain the inductor and shaft in normal position, an engine-driven member for oscillating said shaft and parts carried thereby, separable electrical contacts within the combustion cylinder of the engine, and an impact member fixed relative to the inductor and shaft arranged to effect the separation of said contacts to create an ignition spark in the combustion chamber of the engine.

7. In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an engine cylinder, spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, a rigid unitary and integral support upon which all of the aforesaid parts

are mounted, whereby all of said parts may be removed from and returned to their position upon an engine cylinder without disturbing their relations one to another, conductors for carrying electric current from said generating winding to said electrodes, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it.

8. In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an engine cylinder, spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, a supporting member upon the several parts of which all of the aforesaid mechanism is mounted and having a single integral part adapted to be attached to the engine, whereby all of said mechanism may be removed from the engine by removing said single integral part and may be returned to its position upon the engine with unchanged relations between any and all of the parts of all of said mechanism, thereby insuring the predetermined synchronism and interrelated adjustment of said mechanism when it is replaced upon the engine, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 11th day of January, A. D. 1915.

EDMUND JOSEPH KANE.

Witnesses:

ARTHUR L. SPRINKLE,

THOMAS COLSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

I, Edward M. Holloway, Clerk of the United States Circuit Court of Appeals for the Seventh Circuit, do hereby certify that the foregoing pages, numbered from 1 to 936, inclusive, contain a true copy of the printed book of exhibits which together with the printed record constitutes the record upon which the following cause was heard and determined

Splitdorf Electrical Company

vs.

Webster Electric Company

No. 2769, October Term, 1921, as the same remains upon the files and records of the United States Circuit Court of Appeals, for the Seventh Circuit.

In testimony whereof I hereunto subscribe my name and affix the seal of said United States Circuit Court of Appeals for the Seventh Circuit, at the City of Chicago, this twenty-fifth day of July, 1922.

EDWARD M. HOLLOWAY,

(Seal) *Clerk of the United States Circuit Court of Appeals for the Seventh Circuit.*

Writ of Certiorari and Return

[Filed Dec. 13, 1922]

United States of America, *ss:*

[Seal of the Supreme Court of the United States.]

The President of the United States of America to the Honorable the Judges of the United States Circuit Court of Appeals for the Seventh Circuit, Greeting:

Being informed that there is now pending before you a suit in which Splitdorf Electrical Company is appellant, and Webster Electric Company is appellee, which suit was removed into the said Circuit Court of Appeals by virtue of an appeal from the District Court of the United States for the Northern District of Illinois, and we, being willing for certain reasons that the said cause and the record and proceedings therein should be certified by the said Circuit Court of Appeals and removed into the Supreme Court of the United States, do hereby command you that you send without delay to the said Supreme Court as aforesaid, the record and proceedings in said cause, so that the said Supreme Court may act thereon as of right and according to law ought to be done.

Witness the Honorable William H. Taft, Chief Justice of the United States, the twenty-sixth day of October, in the year of our Lord one thousand nine hundred and twenty-two.

Wm. R. Stansbury, Clerk of the Supreme Court of the United States.

United States of America,
Seventh Circuit, ss:

In obedience to the command of the foregoing writ of certiorari and in pursuance of the stipulation of the parties, a full copy of which is hereto attached, I do hereby certify and return that the transcript of the record filed with the application to the Supreme Court of the United States for a writ of certiorari, and Defendant's Exhibit 56 attached to the said stipulation certified herewith, in the case of Splitdorf Electrical Company, appellant, versus Western Electric Company, appellee, is a full, true and complete transcript of the record upon which said cause was heard in the United States Circuit Court of Appeals for the Seventh Circuit, together with all proceedings in said court.

In testimony whereof, I hereunto subscribe my name and affix the seal of said United States Circuit Court of Appeals for the Seventh Circuit, at the city of Chicago, this eleventh day of December, A. D. 1922.

Edward M. Holloway, Clerk of the United States Circuit Court of Appeals for the Seventh Circuit. [Seal of United States Circuit Court of Appeals, Seventh Circuit.]

[e endorsement omitted.]

In the United States Circuit Court of Appeals for the Seventh Circuit, October Term, A. D. 1922

No. 2769

SPLITDORF ELECTRICAL COMPANY, Appellant,

vs.

WEBSTER ELECTRIC COMPANY, Appellee.

STIPULATION

It is hereby stipulated that the record in this cause, heretofore certified to the Supreme Court and now on file in the office of the Clerk of the Supreme Court, together with the attached copy of the transcript of record in the Kane vs. Podlesak interference (defendant's Exhibit 56), may be taken as a return to the Writ of Certiorari issued by the Supreme Court on October 26, 1922.

It is expressly understood and agreed that the aforesaid interference record shall be included in the printed record in the Supreme Court.

It is further stipulated that except for the interference record aforesaid, each party may retain its physical exhibits until the date of the argument in the Supreme Court.

Edward Rector, Of Counsel for Splitdorf Electrical Co. Lynn A. Williams, Albert G. McCaleb, Herbert B. Moses, Counsel for Webster Electric Co.

Endorsed: Filed Dec. 4, 1922. Edward M. Holloway, Clerk.

DEFENDANT'S EXHIBIT 56

Transcript of Record

Court of Appeals of the District of Columbia, October Term, 1917

Patent Appeal Docket, No. 1147

EDMUND J. KANE, Appellant,

vs.

EMIL PODLESAK.

Appeal from the Commissioner of Patents

(Interference No. 39,181)

Filed September 20, 1917; Printed November 2, 1917.

Court of Appeals of the District of Columbia

Patent Appeal Docket, No. 1147

EDMUND J. KANE, Appellant,

vs.

EMIL PODLESAK.

In the Court of Appeals of the District of Columbia.

No. 1147, Patent Appeal Docket

Interference No. 39181

EMIL PODLESAK

vs.

EDMUND J. KANE.

To the Court of Appeals of the District of Columbia:

Your petitioner, Edmund Joseph Kane, of Chicago, in the County of Cook and State of Illinois, respectfully represents:

That he is the original and first inventor of certain new and useful improvements in Electric Igniters (erroneously designated as Electric Lighters); that on the 14th day of January, 1915, in the manner prescribed by law, he presented his application to the Patent Office (as a division of his parent application filed in the Patent

Office on the 2nd day of February, 1910, serial No. 541,428) praying that a patent be issued to him for the said invention;

That thereafter, to-wit, on the 20th day of October, 1915, an interference proceeding was instituted and declared between his said application and a reissue patent No. 13,878, issued and patented on the 9th day of February, 1915 (original patent No. 1,055,076, dated March 4, 1913) to Emil Podlesak of Racine, Wisconsin (the application for which said original patent was filed in the Patent Office on the 15th day of April, 1912) for a similar invention;

That the subject matter of said interference, as set forth in the official declaration, was as follows:

Count 1. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first mentioned means and operating on the first mentioned arm to hold the same in engagement with the second mentioned arm, and a trip device for actuating the rotor.

Count 2. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first mentioned means, and operating on the first mentioned arm to hold the same in engagement with the second mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

Count 3. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

Count 4. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first mentioned means operating on the first mentioned arm to hold the same in engagement with the second mentioned arm, an integral bracket upon and in which all of the aforesaid device is mounted, and a trip device for actuating the rotor.

Count 5. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first mentioned means, operating on the first mentioned arm to hold the same in engagement with the second mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable

electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shaft extending laterally therefrom and integral therewith, upon which the said generator is mounted, and a trip device for actuating the rotor.

Count 6. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted, and shelf laterally extending therefrom and upon which the said generator is mounted.

Count 7. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing said two arms into engagement; and a trip finger on the rotor.

Count 8. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

Count 9. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

That thereafter the said Emil Podlesak moved to dissolve the aforesaid interference, and that thereafter, to-wit, on the 22nd day of March, 1916, the Law Examiner of the Patent Office rendered his decision denying the said motion to dissolve:

That thereafter, to-wit, on the 24th day of March, 1916, the Ex-

aminer of Interferences of the Patent Office rendered his decision, based upon the record (no testimony having been presented by either party to the said interference) awarding priority of invention to Edward Joseph Kane, the senior party;

That pursuant to the statutes and the Rules of Practice in the Patent Office in such case made and provided, the said Emil Podlesak appealed from the said adverse decision of the Examiner of Interferences to the Board of Examiners-in-Chief, and the case having been argued and submitted to said Board, a decision was rendered by said Board on or about the 15th day of January, 1917, reversing the decision of the Examiner of Interferences and awarding priority of invention to the said Emil Podlesak, the junior party;

That thereafter, pursuant to said statutes and rules, the said Edmund Joseph Kane appealed from the said adverse decision of the Board of Examiners-in-Chief to the Commissioner of Patents, as to counts 4 to 9 inclusive of the said declaration of interference, and the same coming on to be heard and having been argued and submitted, a decision was, on or about the 18th day of June, 1917, rendered by the Commission adverse to your petitioner, affirming and sustaining the decision of the Board of Examiners-in-Chief and awarding priority of invention to the said Emil Podlesak;

That on or about the 6th day of August, 1917, your petitioner, pursuant to Sections 4912 and 4913, Revised Statutes, United States, gave notice to the Commissioner of Patents of his appeal to this Honorable Court from his decision awarding priority of invention to said Emil Podlesak as aforesaid, and filed with him in writing the following reasons of appeal:

1. That the said Commissioner erred in holding Emil Podlesak to be the original and first inventor of counts 4 to 9 inclusive of the issue of the said interference;

2. That the said Commissioner erred in not awarding priority of invention to Edmund J. Kane, as to counts 4 to 9 inclusive of the issue of the said interference;

3. That the said Commissioner erred in finding and holding that the subject matter of counts 4 to 9 inclusive of the issue of the said interference are not disclosed in the application of the said Edmund J. Kane.

That the Commissioner of Patents has furnished your petitioner a certified transcript of the record and proceedings relating to said interference case, which transcript is filed herewith and is to be deemed and taken as a part hereof.

Wherefore your petitioner prays that his said appeal may be heard upon and for the reasons assigned therefor to the Commissioner as aforesaid, and that said appeal may be determined and the decision of the Commissioner be revised and reversed that justice may be done in the premises.

Edmund Joseph Kane and Webster Electric Company, (as Assignee), By Williams & Bradbury, His and Their Attorneys. Lynn A. Williams, Solicitor and of Counsel.

2-390

United States of America.
Department of the Interior.
United States Patent Office.

To all to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the Records of this Office of Certain Papers, including printed testimony as used before the Office, in the matter of Interference Number 39181, Igniters†
Podlesak vs. Kane, Subject-Matter:—Electric [Lighters]:* said Papers being the Record for the Court of Appeals of the District of Columbia.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington, this 17th day of September, in the year of our Lord one thousand nine hundred and seventeen and of the Independence of the United States of America the one hundred and forty-second.

F. W. H. Clay, Acting Commissioner of Patents. [Seal Patent Office, United States of America.]

$30, C'k, Received Dec. 18, 1914. G. Chief Clerk, U. S. Patent Office

878,726

PETITION FOR A REISSUE

To the Commissioner of Patents:

Your petitioner, Emil Podlesak, a citizen of the United States and a resident of Racine, in the county of Racine and State of Wisconsin, formerly residing at the City of Tiffin, in the State of Ohio, whose post-office address is Racine, Wisconsin, prays that he may be allowed to surrender the Letters Patent for an improvement in Current Generators and Igniters for Internal Combustion Engines, granted to him March 4, 1913, whereof he is now sole owner and that Letters Patent may be reissued to him for the same invention upon the annexed amended specification; and he hereby appoints Lynn A. Williams, (Reg. No. 5520) of Monadnock Block, Chicago, Illinois, his attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent Office connected therewith. With this petition is filed an abstract of title, duly certified, as required in such cases.

[*Words and figures enclosed in brackets erased in copy.]
[†In pencil in copy.]

Signed at Racine, in the County of Racine, and State of Wisconsin, this 14th day of October, 1914.

Emil Podlesak.

(Revenue Stamp.)

To all whom it may concern:

Be it known that I, Emil Podlesak, a citizen of the United States, residing at Tiffin, in the County of Seneca and State of Ohio, have invented certain new and useful Improvements in Current-Generators and Igniters for Internal Combustion Engines, of which the following is a specification.

This invention relates to igniters of the make and break type and in which the magnetic or current generator is combined therewith as a unitary structure that is fastened to the head or other suitable part of the engine cylinder, the rotor of the generator being operatively connected with the movable electrode of the igniter so that a reciprocatory actuator, push rod or equivalent means operating on the rotor trip finger against the tension of spring means causes the rotor to move to "cocked" position while the electrodes of the igniter are brought together, and then released from such "cocked" position so that the electro-motive force generated by the sudden return movement of the rotor through the magnetic field of the generator will produce the igniting current whereby the spark is produced between the electrodes in the compression chamber of the engine. The combination of means and instrumentalities above referred to is the subject-matter of my pending application for Letters Patent of the United States, Serial No. 668,153, filed December 27, 1911, and the present invention relates to improvements especialy adapted for combined igniters and generators of the type referred to.

The actuating means for the rotor and movable electrode is mounted on the engine cylinder or other suitable part and is operatively connected with some moving mechanism and has no connection with the magneto or igniter, since the actuator, which may be a push rod, rotating or oscillatory arm or the like, merely contacts with the trip finger of the rotor. As the igniter and generator must be removed from time to time for cleaning the electrodes and other reasons, it is of great importance that the igniter and generator be replaced in exactly the same position it was before removal; otherwise, the push rod will not be disposed in proper relation to the trip finger of the rotor to accomplish satisfactory results in the operation of the engine, generator and igniter. The reason for this liability of the igniter being replaced in a different position from that which it originally occupied when all the operating parts, were adjusted to accomplish the best results, is due to the fact that the holes in the body of the igniter for receiving the bolts or fastening studs are made larger than the bolts or studs, as is also the opening in the engine cylinder for receiving the body of the igniter, this "latitude" between the parts being provided so as to facilitate easy removal of the igniter and to obviate the necessity of careful and expensive machining and fitting of the parts. By reason of the liability to error in

replacing the igniter, there is provided an arm or equivalent means on the igniter body to inter-engage with a fixed part on the engine cylinder, so that there can be but one position in which the igniter can be attached to the cylinder, and that position is the one where the push rod or other actuator is in proper relation to the trip finger of the rotor. As the result of this arrangement, it is never necessary to adjust the relation of the various instrumentalities in replacing the igniter when it has been removed for cleaning or any other purpose.

In addition to the foregoing objects and advantages, the invention has certain other minor advantages which will appear hereinafter as the description proceeds in reference to the accompanying drawings, in which

Figure 1 is a front view of the combined igniter and current generator applied to the head of an engine cylinder, part of the generator being shown in section. Fig. 2 is a front view thereof showing a portion of the cylinder head in section. Fig. 3 is a sectional view on line 3—3, Fig. 2. Fig. 4 is a diagrammatic view to show the results of a defective positioning of the igniter with respect to the operating push rod.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the head or other wall of a cylinder of an internal combustion engine; B, the make and break igniter; and C, the magneto current generator of the inductor type.

The igniter B comprises a cylindrical body 1 which passes through an opening 2 in the cylinder head A, the opening being of slightly larger diameter than the diameter of the igniter body, so that the latter can be easily inserted or removed. Passing through the igniter body is a fixed electrode 3 with which cooperates a movable or rocking electrode 4. The outer end of the igniter body is formed with a rhomboidal plate 5, which, as shown in Fig. 1, has bolt-receiving openings 6 that are slightly larger in diameter than the fastening bolts or studs 7 that pass through the openings and are fastened to the cylinder head A. Thus, there is considerable latitude allowed between the body of the igniter on the one hand and the cylinder head and fastening bolts on the other, and by reason of this, the igniter body is liable to be fastened to the cylinder head in a variety of positions within the limit of this latitude, the disadvantages of which have been hereinbefore pointed out, but are overcome by the improvements later to be set forth.

Extending from the plate portion 5 of the igniter body is a shelf or bracket 8 which forms a base to which the generator C is removably secured by stud bolts 9. Projecting laterally from the bracket or shelf 8 is an arm 10 which is formed at its outer extremity with a boss or enlargement 11 that has a passage through which extends an extension rod 12, the rod being fastened in any desired position by a set screw 13 or equivalent means. The outer extremity of this extension rod is located at a considerable distance from the axis of the igniter and this extremity is adapted to engage some fixed part of the engine, such for instance as lugs 14 on the arm 15 in

which the operating shaft 16 rotates. The lugs 14 are spaced apart far enough for the extension rod to enter between them as the igniter body is inserted in the opening in the engine cylinder, and when thus positioned, it is impossible for the igniter body to shift angularly or around its axis and thereby disturb the proper relation of the igniter and generator operating means. The parts 10, 12 and 14 thus constitute means for insuring the proper positioning of the igniter and the design of the parts is such that no special care or adjustment is required in taking off or replacing the igniter.

The generator C is fully set forth in the pending application hereinbefore referred to, so that only a brief description here is deemed necessary. The generator comprises permanent horseshoe magnets 17 fastened to E-shaped pole pieces 18, on the middle projections of which are generating coils 19. In the present drawings, only one pole piece and coil is shown in Fig 1, the other corresponding parts being concealed from view. Between the pole pieces oscillates a cruciform rotor 20 mounted on a shaft 21 which has at one end oppositely disposed crank arms 22 which are connected with springs 23 that assume an alining position through the axis of the rotor when the latter is idle, the outer ends of the springs being fastened to studs 24 on the generator frame. On the opposite end of the rotor shaft is a trip finger 25 which is adapted to have a wiping engagement with a push rod 26 or other equivalent actuator, which rod has its end opposite from the trip finger connected with the crank pin 27 of the rotating shaft 16. The push rod or actuator has a combined reciprocatory and rocking movement on a bearing pulley 28 journaled on a support 29 which is fastened by a bolt or equivalent means 30 to the arm 10 of the igniter frame, said bolt forming a pivot on which the member 29 can be adjusted to different positions for bringing the free end of the push rod 26 into proper cooperative relation with the trip finger 25. The trip finger has a tail piece on arm 31 which is adapted to be engaged by an arm 32 fastened to the outer end of the movable electrode 4, the arm 32 being held yieldingly against the arm 31 by a helical extension spring 33 which has one end connected with the arm 32 and the other end anchored at 34 on the igniter frame. To obtain the proper set of the sparking points of the electrodes with respect to the rotor of the generator, one arm, such as 32, has an adjustable screw 35 which engages the arm 31. The spring 33 is of less tension than the return springs 23 of the rotor and is sufficient to maintain the arms 31 and 32 in contact during the first part of the cocking movement of the armature and to maintain the electrodes in contact during the final part of such cocking movement, it being understood that the electrodes are normally separated, and that they come into contact before the rotor or armature finishes its cocking movement, or the position of the rotor shown by dotted lines in Fig. 1. At the end of the cocking movement, the push rod 26 slips off the tip of the trip finger, and the springs 23, which have been extended or placed under tension during the cocking movement, quickly snap the rotor back to and beyond its normal position, as indicated by the dot and dash lines, Fig. 1. This quick movement of the rotor quickly changes the path of the

magnetic flux through the pole pieces and rotor, with the result that a high electro-motive force is induced in the generating coils, the maximum electro-motive force occurring at about the time the electrodes are separated during the return movement of the arm 31 of the trip finger, such arm being adapted to strike the arm 32 a hammer blow for effecting a quick separation of electrodes.

By referring to Fig. 4 the effect of a defective positioning of the igniter is clearly depicted. Without the use of the positioning controlling parts 10, 12 and 14, it is possible for the igniter to be secured in either the full line position *a* or dotted line position *b*, because of the latitude provided between the ignited body and the bolts and cylinder wall. In other words, the igniter can be fastened to one side or the other of its true central position to an extent corresponding to the angle *d*. Thus, the trip arm of the rotor 25 would be in the dotted line position *c* when the igniter is in the dotted line position *b*, and as a consequence the push rod 26 would not be long enough to operate the trip finger 25, and furthermore the push rod supporting roller 28 would be raised to the dotted line position *e*, thereby raising the active end of the trip rod above the tip of the trip finger. When the igniter body is in the full line position *a*, the trip finger is shifted to the right and the supporting roller 28 is lowered so that the push rod and trip finger will obviously be in proper position. These contingencies can be guarded against by providing the arm 10 on the igniter body and having some means on the fixed part of the engine to engage such arm, such means being the lugs 14, as in Fig. 1, or a bolt or pin 14^a engaging in the slot 10^a of the arm 10, as in Fig. 4.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:

1. The combination of an engine cylinder, a make and break igniter, fastening means for securing the igniter in position on the cylinder, an electric generator having its movable element operatively connected with the movable element of the igniter, an actuator for the movable elements of the igniter and generator, said igniter being removable from the cylinder while the actuator remains in place, and means in addition to the said fastening means for insuring the correct positioning of the igniter with respect to the actuator when the former is replaced on the engine after removal and for preventing shifting of the igniter, said latter means comprising engaged parts on the engine cylinder and igniter.

2. The combination of engine cylinder, an igniter, means for removably fastening the igniter on the cylinder, there being sufficient

play between the parts to insure removal of the igniter while rendering the igniter liable to replacement for different positions, an actuator for the igniter requiring a predetermined position of the igniter with respect thereto, and means partly on the igniter and partly on the engine for insuring such predetermined relative position of the actuator and igniter.

3. The combination of an engine cylinder, and igniter and electric generator forming a unitary structure removably mounted on the cylinder, fastening means for the said unitary structure, said structure being liable to replacement in different positions on the cylinder, an actuator for the movable elements of the generator and igniter and operatively connected with the moving part of the engine, and means in addition to the said fastening means for insuring a predetermined relative position of the actuator and movable elements of the igniter and generator, said latter means consisting of relatively fixed parts of the said structure and engine cylinder which inter-engage when the said structure is in proper position.

4. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising a laterally-extending arm on the igniter, and a fixed part on the engine with which the arm is adapted to engage.

5. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising an arm on the igniter, a longitudinally adjustable member on the arm, and a part fixed on the engine with which the said member is adapted to releasably engage.

6. The combination of an engine cylinder, a make and break igniter mounted thereon and liable to assume different positions within certain limits, an actuator for the movable element of the igniter, means for moving the actuator, a laterally-extending arm on the igniter, and means fixed on the engine with which the arm is removably connected to insure such position of the igniter that the actuator and movable electrode will be in proper relation to each other, and means on the arm for supporting the actuator.

7. The combination of an engine cylinder, a make and break igniter removably mounted thereon and liable to assume different positions within certain limits, a generator carried by the igniter and removable therewith as a unitary structure, the movable elements of the igniter and generator being operatively connected, an actuator for the said movable elements, a moving part of the engine with which the actuator remains connected while the igniter and generator are removed, and engaging means between the said structure and engine cylinder for permitting the placing of the latter in only one position.

8. The combination of an engine cylinder having an opening, a make and break igniter secured in the opening and liable to assume

different positions within certain limits, a generator mounted on the igniter and removable therewith, means for operatively connecting the movable elements of the igniter and generator, a push rod, a trip finger connected with one of the movable elements and with which the actuator is adapted to engage, and means arranged partly on the engine and partly on the igniter and generator structure whereby the push rod and trip finger will be in proper relation to each other each time the igniter and generator structure is replaced after removal from the cylinder.

9. The combination of an engine cylinder, an igniter mounted thereon, a generator mounted on the igniter, means for operatively connecting the movable elements of the generator and igniter to move together, a trip finger connected with the said movable elements, an operating shaft, a push rod adapted to engage the trip finger, means for reciprocating the rod by the shaft, and means whereby the igniter and generator structure can be fastened in only one position where the push rod and trip finger are in proper relation to each other, said means comprising a part on the igniter and generator structure and a part on the engine with which the first part is detachably engaged.

10. The combination of an engine, an igniter mounted on the cylinder thereof, a bracket extending from the igniter, a generator on the bracket, means for operatively connecting the movable elements of the generator and igniter together, a trip finger connected with the movable elements, a push rod adapted to wipe on the trip finger, means for actuating the push rod, an arm extending from the bracket, a support on the arm for the trip rod, and means fixed on the engine with which the arm engages whereby the igniter can be replaced on the engine cylinder in only that position in which the trip finger and push rod are in proper relation.

11. The combination of an engine cylinder, an arm extending laterally from the head thereof, a shaft bearing in the arm, a push rod, and a crank pin connection between the shaft and push rod, with an igniter mounted on the engine cylinder and having its movable electrode operatively related to the push rod, an arm extending from the igniter, and means on the arm of the engine cylinder with which the first-mentioned arm detachably engages for permitting the igniter to be attached in only that position where the push rod and movable electrode are in proper relation, and means on the first-mentioned arm for movably supporting the push rod.

12. The combination of an engine cylinder, an igniter and current generator structure removably mounted thereon, the movable elements of the igniter and generator being operatively connected, a trip finger connected with such movable elements, an arm extending from the igniter, means fixed with respect to the engine cylinder for engagement with the arm whereby the said structure can be fastened in only one position on the cylinder, an actuating push rod arranged to engage the trip finger, means for reciprocating the push rod, and an adjustable support mounted on the arm and on which the push rod moves.

13. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

14. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

15. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

16. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion motor, sparking electrodes mounted in said body, a magnetic generator mounted on said base, means for actuating the said generator to generate current, means for actuating one of the electrodes, and means relatively fixed on said motor for engaging said laterally extending arm.

17. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion engine, sparking electrodes mounted in said body and adapted to make and break a circuit within the combustion chamber of the engine, a magneto generator mounted on said base, means for actuating the magneto generator to generate current, means for operating one of the electrodes cooperatively with said generator, a member extensibly mounted in said laterally extending arm, and means secured in relatively fixed relation on the engine to engage said extensible member.

18. In combination, a magneto generator comprising a field magnet, a pair of pole pieces, inductive windings, and a rotor mounted on a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon the release, an igniter frame comprising a body and a shelf extending therefrom and supporting said generator, a stationary insulated electrode and a movable electrode mounted in said body, said movable electrode adapted to make contact with the other said electrode, an arm on said rotor shaft and adapted to cooperate with said arm on movable electrode to so oscillate the movable electrode as to make and break contact with said other electrode, a circuit connecting said windings to said electrodes,

and an arm extending from said igniter frame and adapted to engage on a relatively fixed member on the engine associated with said frame.

19. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

20. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

21. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

22. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

23. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger

on the rotor, and means operable by said motor for actuating the trip finger.

24. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

In witness whereof, I hereunto subscribe my name this 30th day of October, A. D. 1914.

Emil Podlesak. Witnesses: B. R. Beckwith. H. F. Geist.

OATH.

STATE OF WISCONSIN,
County of Racine, ss:

Emil Podlesak, the above-named petitioner, being duly sworn, deposes and says that he does verily believe himself to be the original, first and sole inventor of the improvement set forth and claimed in the foregoing specification and for which improvement he solicits a patent; that deponent does not know and does not believe that said improvement was ever before known or used; that deponent is a citizen of the United States of America and resided formerly at the City of Tiffin, in the State of Ohio, and now resides at the City of Racine, County of Racine and State of Wisconsin; that deponent verily believes that the Letters Patent referred to in the foregoing petition and specification and herewith surrendered are inoperative for the reason that the specification thereof is defective and insufficient, and that such defect and insufficiency consists particularly in the fact that the words "improperly positioned" in lines 19 and 20 of page 23 of the original specification should read in proper position; the fact that the words "Fig. 9" in lines 26 of page 3 of the original specification should read Fig. 4; the fact that claim 14 of the original patent does not positively include means on one of the arms therein referred to for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor; that claim 15 of the original patent includes as elements, first, a spring connected with the arm, and, second, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, there being in the structure illustrated and described but a single

spring, wherefore there is a duplication or repetition of the elements in the said claim 15; the fact that in line 6 of claim 16 the phrase "in said base" should read on said base; and the fact that the claims contained in the original patent do not cover the whole of the deponent's invention, particularly in failing to claim those combinations of elements set forth in claims 19 to 24, inclusive, of the foregoing specification; and deponent further says that the errors which render such patent so inoperative arose from inadvertence and mistake and without any fraudulent or deceptive intention on the part of deponent; that the following is a true specification of the errors which it is claimed constitute such inadvertence and mistake relied upon.

Deponent has invented various improvements in the general class of apparatus covered in the aforesaid patent, and either as such inventor or as joint inventor with his brother, Henry J. Podlesak, has procured several United States patents. Deponent, while familiar with the design, construction and operation of such mechanism, has never become familiar in detail with the procedure employed in soliciting patents. Deponent's brother, Henry J. Podlesak, has for many years taken charge of the detail work of preparing and prosecuting applications for patents covering the deponent's inventions and has, in deponent's opinion, become familiar with and skilled in the preparation and prosecution of applications for United States Letters Patent.

Shortly prior to April 15, 1912, upon which date the application for the original patent aforesaid was filed, it came to deponent's attention that the invention described in the aforesaid application was being employed by a large manufacturing concern in violation of the deponent's intention to secure to himself the exclusive right to make, use and sell the said invention.

Deponent therefore communicated with his brother, Henry J. Podlesak, advising him of the details of the construction and mode of operation of the invention sought to be covered. Deponent was thereupon advised by the said Henry J. Podlesak that the latter was very much behind in his regular work because of a severe and long continued attack of rheumatism, and that it would be practically impossible for the said Henry J. Podlesak to undertake the prosecution of the said application himself. Deponent was, however, advised by the said Henry J. Podlesak that the latter would turn the application over to someone else to be prepared and prosecuted.

Deponent thereupon assumed that the said Henry J. Podlesak would follow the prosecution of the application with the same degree of care and thoroughness as had been exercised by him in the prosecution of other earlier applications. Within the past thirty days a careful study of the said issue patent No. 1,055,076 has developed the fact that it is inoperative, due to defects and insufficiencies in the specification as above pointed out. Immediately thereafter deponent instituted an inquiry and learned from the said Henry J. Podlesak that he had turned over to Chattin Bradway the preparation and prosecution of the application aforesaid, giving him such detailed instruction as in his opinion would suffice to secure adequate protection upon the invention. Deponent learned also

rom the said Henry J. Podlesak that the latter was unable, on account of illness and the pressure of other business with which his llness interfered, to give the matter of the preparation and prosecuion of the application for the original patent such thorough care nd consideration as had been his custom, leaving it largely to the aid Chattin Bradway to prepare and prosecute the application.

The defect and insufficiency of the specification occurring in ines 19 and 20 of page 3, to the best of deponent's ability to learn he facts, resulted as follows: The specification was dictated to read, in proper position," and was transcribed by the stenographer to ead "improperly positioned," the two phrases having a great simiarity of sound but entirely different meanings. The error was not iscovered by deponent in executing the original application papers or until within the past thirty days.

The defects and insufficiencies of claims 14, 15 and 16 of the riginal patent arose from the fact that the preparation and prosecution of the application was handled through several intermeliaries communicating one with another. It was due to the lack f direct communication and due to a divided and uncertain reponsibility between the several parties concerned that as finally ssued claim 14 did not include positively as an element means on ne of the arms for adjusting the relation of the arms and thereby he relation of the position of the movable electrode to the rotor, nd that as finally issued claim 15 repeated the element involving he spring connected with the arm and tending to hold the electrode nto engagement with the arm of the rotor.

Deponent originally communicated to his brother and his brother ndeavored to communicate to the said Chattin Bradway the sevral features of invention and improvement disclosed in the application for the said original patent, and it was the desire and ntention of deponent that all the said features of invention and mprovement and all of the said elements and combination conituting the said features of invention and improvement should e covered by adequate claims. Within the past thirty days a areful review of the said claims, with the assistance and advice of he said Henry J. Podlesak, has revealed the fact that certain cominations of elements, particularly those set forth in the aforeaid claims 19 to 24, inclusive, were not included among the claims f the patent as originally issued.

The aforesaid errors arose partly no doubt because of the fact hat deponent was extremely anxious when he filed his application or the original Letters Patent aforesaid to secure the issue of the atent at the earliest possible date in order to enjoin the aforesaid anufacturer from employing his invention. It was no doubt ue in part to the deponent's anxiety to have the prosecution of the pplication completed at the earliest possible moment that it was urried through without awaiting an opportunity for such careful onsideration and analysis, particularly on the part of the said Henry . Podlesak, as the deponent ordinarily would have availed himself of.

Emil Podlesak.

Subscribed and sworn to before me this 14th day of October, A. 1914.

Christian Johnson. (Seal.) My Com. pires Sept. 3 16.

(Revenue Stamp.)

OATH AS TO THE LOSS OF LETTERS PATENT

STATE OF WISCONSIN,
County of Racine, ss:

Emil Podlesak, being duly sworn, deposes and says that the Lett Patent No. 1,055,076, granted to him, and bearing date on the 4 day of March 1913, have been either lost or destroyed; that he h made diligent search for the said Letters Patent in all places whe the same would probably be found, if existing, and that he has be unable to find them.

Emil Podlesa

Subscribed and sworn to before me this 30th day of October A. 1914.

Christian Johnson, Notary Public. (Seal
My Commission expires Sept. 8-1916.

(Revenue Stamp.)

Chief Clerk,
Sep. 7, 1915.
U. S. Patent Office.

Mr. Podlesak brought the Letters Patent to the Office with th statement that they had recently been discovered in a file of pape relating to a different matter.

W. F. Woolard, Chief Cler

No. [Vignette] 1,055,076

[Stamped across face of copy:] Surrendered.

THE UNITED STATES OF AMERICA:

To all to whom these presents shall come:

Whereas Emil Podlesak, of Tiffin, Ohio, has presented to the Com missioner of Patents a petition praying for the grant of Letters Pa ent for an alleged new and useful improvement in Current-Gener tors and Igniters for Internal-Combustion Engines, a description o which invention is contained in the specification of which a cop is hereunto annexed and made a part hereof, and has complied wit the various requirements of Law in such cases made and provided and

Whereas upon due examination made the said Claimant is ad judged to be justly entitled to a patent under the Law.

[Stamped across face of copy:] Surrendered.

Now therefore these Letters Patent are to grant unto the said Emil Podlesak, his heirs or assigns for the term of Seventeen years from the fourth day of March, one thousand nine hundred and thirteen, the exclusive right to make, use and vend the said invention throughout the United States and the Territories thereof.

[Stamped across face of copy:] Surrendered.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington this fourth day of March, in the year of our Lord one thousand nine hundred and thirteen, and of the Independence of the United States of America the one hundred and thirty-seventh.

C. C. Billings, Acting Commissioner of Patents.

Printed copy, same as copy with File and Contents #1,055,076.

L. A. Williams. 267,785. 1914

Department of the Interior,
United States Patent Office.
Washington, D. C., December 21, 1914.

Application of Emil Podlesak, Tiffin, Ohio, for Reissue of Letters Patent, No. 1,055,076, dated March 4, 1913 for improvement in "Current-Generator and *and* Igniter for Internal-Combustion Engines."

I certify that careful search has been made in the Digest of Assignments in this Division and that no assignment of undivided interest is found of record under or relating to the aforesaid Letters Patent up to and including December 12, 1914.

Willis B. Magruder, Chief of Assignment Division. W. G. W.

Paper No. 1

Oct. 26, 1915.

Lynn A. Williams, Monadnock Block, Chicago, Ill.:

Patent to Emil Podlesak No. 13,878, Reissued Feb. 9, 1915, S. No. 878,726, filed Dec. 23, 1914, Current-Generator and Igniter for Internal-Combustion Engines (Original No. 1,055,076, dated Mar. 4, 1913, S. No. 690,921.

39,181

Count 1. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

Count 2. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

Count 3. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

Count 4. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagment with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

Count 5. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shaft extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

Count 6. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

Count 7. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said mova-

964

E. PODLESAK.

CURRENT GENERATOR AND IGNITER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED DEC. 23, 1914.

Reissued Feb. 9, 1915.

13,878.

2 SHEETS—SHEET 1.

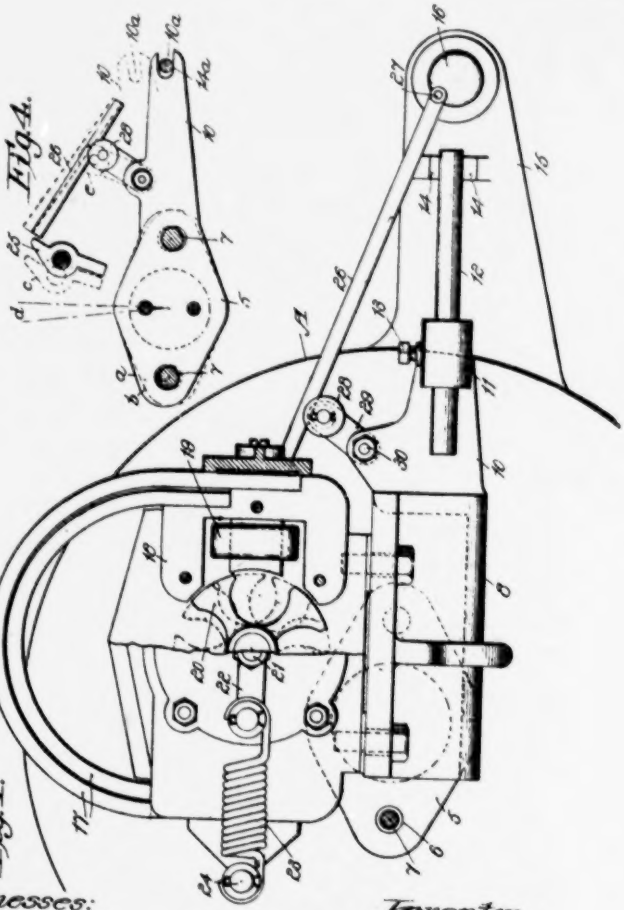


Fig. 1.

Fig. 4.

Witnesses:
Albin C. Allberg
Robert J. Brad

Inventor
Emil Podlesak
By Ryan & Williams
Attorney

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E. PODLESAK.

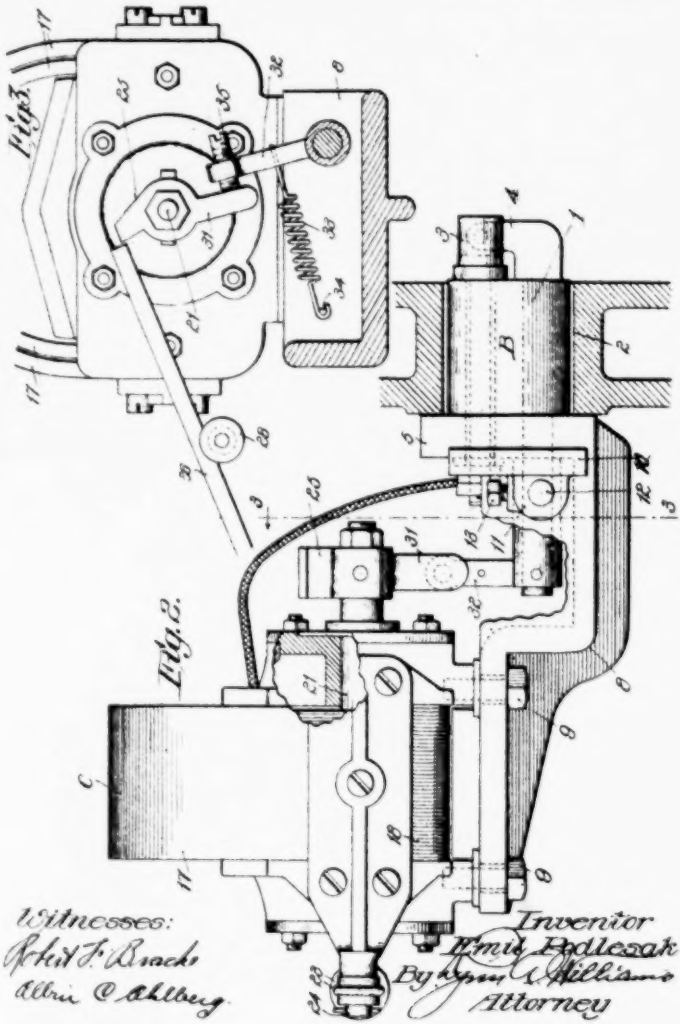
CURRENT GENERATOR AND IGNITER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED DEC. 23, 1914.

Reissued Feb. 9, 1915.

13,878.

2 SHEETS—SHEET 2.



Witnesses:
Robert F. Brack
Alvin C. Ahlberg

Inventor
Emil Podlesak
By Lynn A. Williamson
Attorney

UNITED STATES PATENT OFFICE.

EMIL PODLESAK, OF TIFFIN, OHIO

CURRENT-GENERATOR AND IGNITER FOR INTERNAL-COMBUSTION ENGINES.

13,878. Specification of Reissued Letters Patent. Reissued Feb. 9, 1915.

Original No. 1,055,076, dated March 4, 1913. Serial No. 690,921. Application for reissue filed December 23, 1914. Serial No. 878,726.

To all whom it may concern:

Be it known that I, EMIL PODLESAK, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Current-Generators and Igniters for Internal-Combustion Engines, of which the following is a specification.

This invention relates to igniters of the make and break type and in which the magneto or current generator is combined therewith as a unitary structure that is fastened to the head or other suitable part of the engine cylinder, the rotor of the generator being operatively connected with the movable electrode of the igniter so that a reciprocatory actuator, push rod or equivalent means operating on the rotor trip finger against the tension of spring means causes the rotor to move to "cocked" position while the electrodes of the igniter are brought together, and then released from such "cocked" position so that the electromotive force generated by the sudden return movement of the rotor through the magnetic field of the generator will produce the igniting current whereby the spark is produced between the electrodes in the compression chamber of the engine. The combination of means and instrumentalities above referred to is the subject-matter of my pending application for Letters Patent of the United States, Serial No. 668,153, filed December 27, 1911, and the present invention relates to improvements especially adapted for combined igniters and generators of the type referred to.

The actuating means for the rotor and movable electrode is mounted on the engine cylinder or other suitable part and is operatively connected with some moving mechanism and has no connection with the magneto or igniter, since the actuator, which may be a push rod, rotating or oscillatory arm or the like, merely contacts with the trip finger of the rotor. As the igniter and generator must be removed from time to time for cleaning the electrodes and other reasons, it is of great importance that the igniter and generator be replaced in exactly the same position it was before removal; otherwise, the push rod will not be disposed in proper relation to the trip finger of the rotor to accomplish satisfactory results in the operation of the engine, generator and igniter. The reason for this liability of the igniter being replaced in a different position from that which it originally occupied when all the operating parts were adjusted to accomplish the best results, is due to the fact that the holes in the body of the igniter for receiving the bolts or fastening studs are made larger than the bolts or studs, as is also the opening in the engine cylinder for receiving the body of the igniter, this "latitude" between the parts being provided so as to facilitate easy removal of the igniter and to obviate the necessity of careful and expensive machining and fitting of the parts. By reason of the liability to error in replacing the igniter, there is provided an arm or equivalent means on the igniter body to inter-engage with a fixed part on the engine cylinder, so that there can be but one position in which the igniter can be attached to the cylinder, and that position is the one where the push rod or other actuator is in proper relation to the trip finger of the rotor. As the result of this arrangement, it is never necessary to adjust the relation of the various instrumentalities in replacing the igniter when it has been removed for cleaning or any other purpose.

In addition to the foregoing objects and advantages, the invention has certain other minor advantages which will appear hereinafter as the description proceeds in reference to the accompanying drawings, in which—

Figure 1 is a front view of the combined igniter and current generator applied to the head of an engine cylinder, part of the generator being shown in section. Fig. 2 is a front view thereof showing a portion of the cylinder head in section. Fig. 3 is a sectional view on line 3—3, Fig. 2. Fig. 4 is a diagrammatic view to show the results of a defective positioning of the igniter with respect to the operating push rod.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the head or other wall of a cylinder of an internal combustion engine; B, the make and break igniter; and C, the magneto current generator of the inductor type.

The igniter B comprises a cylindrical body 1 which passes through an opening 2

in the cylinder head A, the opening being of slightly larger diameter than the diameter of the igniter body, so that the latter can be easily inserted or removed. Passing through the igniter body is a fixed electrode 3 with which coöperates a movable or rocking electrode 4. The outer end of the igniter body is formed with a rhomboidal plate 5, which, as shown in Fig. 4, has bolt-receiving openings 6 that are slightly larger in diameter than the fastening bolts or studs 7 that pass through the openings and are fastened to the cylinder head A. Thus, there is considerable latitude allowed between the body of the igniter on the one hand and the cylinder head and fastening bolts on the other, and by reason of this, the igniter body is liable to be fastened to the cylinder head in a variety of positions within the limit of this latitude, the disadvantages of which have been hereinbefore pointed out, but are overcome by the improvements later to be set forth.

Extending from the plate portion 5 of the igniter body is a shelf or bracket 8 which forms a base to which the generator C is removably secured by stud bolts 9. Projecting laterally from the bracket or shelf 8 is an arm 10 which is formed at its outer extremity with a boss or enlargement 11 that has a passage through which extends an extension rod 12, the rod being fastened in any desired position by a set screw 13 or equivalent means. The outer extremity of this extension rod is located at a considerable distance from the axis of the igniter and this extremity is adapted to engage some fixed part of the engine, such for instance as lugs 14 on the arm 15 in which the operating shaft 16 rotates. The lugs 14 are spaced apart far enough for the extension rod to enter between them as the igniter body is inserted in the opening in the engine cylinder, and when thus positioned, it is impossible for the igniter body to shift angularly or around its axis and thereby disturb the proper relation of the igniter and generator operating means. The parts 10, 12 and 14 thus constitute means for insuring the proper positioning of the igniter and the design of the parts is such that no special care or adjustment is required in taking off or replacing the igniter.

The generator C is fully set forth in the pending application hereinbefore referred to, so that only a brief description here is deemed necessary. The generator comprises permanent horseshoe magnets 17 fastened to E-shaped pole pieces 18, on the middle projections of which are generating coils 19. In the present drawings, only one pole piece and coil is shown in Fig. 1, the other corresponding parts being concealed from view. Between the pole pieces oscillates a cruciform rotor 20 mounted on a shaft 21 which has at one end oppositely disposed crank arms 22 which are connected with springs 23 that assume an alining position through the axis of the rotor when the latter is idle, the outer ends of the springs being fastened to studs 24 on the generator frame. On the opposite end of the rotor shaft is a trip finger 25 which is adapted to have a wiping engagement with a push rod 26 or other equivalent actuator, which rod has its end opposite from the trip finger connected with the crank pin 27 of the rotating shaft 16. The push rod or actuator has a combined reciprocatory and rocking movement on a bearing pulley 28 journaled on a support 29 which is fastened by a bolt or equivalent means 30 to the arm 10 of the igniter frame, said bolt forming a pivot on which the member 29 can be adjusted to different positions for bringing the free end of the push rod 26 into proper coöperative relation with the trip finger 25. The trip finger has a tail piece or arm 31 which is adapted to be engaged by an arm 32 fastened to the outer end of the movable electrode 4, the arm 32 being held yieldingly against the arm 31 by a helical extension spring 33 which has one end connected with the arm 32 and the other end anchored at 34 on the igniter frame. To obtain the proper set of the sparking points of the electrodes with respect to the rotor of the generator, one arm, such as 33, has an adjustable screw 35 which engages the arm 31. The spring 33 is of less tension than the return springs 23 of the rotor and is sufficient to maintain the arms 31 and 32 in contact during the first part of the cocking movement of the armature and to maintain the electrodes in contact during the final part of such cocking movement, it being understood that the electrodes are normally separated, and that they come into contact before the rotor or armature finishes its cocking movement, or the position of the rotor shown by dotted lines in Fig. 1. At the end of the cocking movement, the push rod 26 slips off the tip of the trip finger, and the springs 23, which have been extended or placed under tension during the cocking movement, quickly snap the rotor back to and beyond its normal position, as indicated by the dot and dash lines, Fig. 1. This quick movement of the rotor quickly changes the path of the magnetic flux through the pole pieces and rotor, with the result that a high electro-motive force is induced in the generating coils, the maximum electro-motive force occurring at about the time the electrodes are separated during the return movement of the arm 31 of the trip finger, such arm being adapted to strike the arm 32 a hammer blow for effecting a quick separation of electrodes.

By referring to Fig. 4 the effect of a defective positioning of the igniter is clearly

depicted. Without the use of the positioning controlling parts 10, 12 and 14, it is possible for the igniter to be secured in either the full line position *a* or dotted line position *b*, because of the latitude provided between the igniter body and the bolts and cylinder wall. In other words, the igniter can be fastened to one side or the other of its true central position to an extent corresponding to the angle *d*. Thus, the trip arm of the rotor 25 would be in the dotted line position *c* when the igniter is in the dotted line position *b*, and as a consequence the push rod 26 would not be long enough to operate the trip finger 25, and furthermore the push rod supporting roller 28 would be raised to the dotted line position *e*, thereby raising the active end of the trip rod above the tip of the trip finger. When the igniter body is in the full line position *a*, the trip finger is shifted to the right and the supporting roller 28 is lowered so that the push rod and trip finger will obviously be in proper position. These contingencies can be guarded against by providing the arm 10 on the igniter body and having some means on the fixed part of the engine to engage such arm, such means being the lugs 14, as in Fig. 1, or a bolt or pin 14ª engaging in the slot 10ª of the arm 10, as in Fig. 4.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. The combination of an engine cylinder, a make and break igniter, fastening means for securing the igniter in position on the cylinder, an electric generator having its movable element operatively connected with the movable element of the igniter, an actuator for the movable elements of the igniter and generator, said igniter being removable from the cylinder while the actuator remains in place, and means in addition to the said fastening means for insuring the correct positioning of the igniter with respect to the actuator when the former is replaced on the engine after removal and for preventing shifting of the igniter, said latter means comprising engaged parts on the engine cylinder and igniter.

2. The combination of an engine cylinder, an igniter, means for removably fastening the igniter on the cylinder, there being sufficient play between the parts to insure removal of the igniter while rendering the igniter liable to replacement for different positions, an actuator for the igniter requiring a predetermined position of the igniter with respect thereto, and means partly on the igniter and partly on the engine for insuring such predetermined relative position of the actuator and igniter.

3. The combination of an engine cylinder, an igniter and electric generator forming a unitary structure removably mounted on the cylinder, fastening means for the said unitary structure, said structure being liable to replacement in different positions on the cylinder, an actuator for the movable elements of the generator and igniter and operatively connected with the moving part of the engine, and means in addition to the said fastening means for insuring a predetermined relative position of the actuator and movable elements of the igniter and generator, said latter means consisting of relatively fixed parts of the said structure and engine cylinder which inter-engage when the said structure is in proper position.

4. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising a laterally-extending arm on the igniter, and a fixed part on the engine with which the arm is adapted to engage.

5. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising an arm on the igniter, a longitudinally adjustable member on the arm, and a part fixed on the engine with which the said member is adapted to releasably engage.

6. The combination of an engine cylinder, a make and break igniter mounted thereon and liable to assume different positions within certain limits, an actuator for the movable element of the igniter, means for moving the actuator, a laterally-extending arm on the igniter, and means fixed on the engine with which the arm is removably connected to insure such position of the igniter that the actuator and movable electrode will be in proper relation to each other, and means on the arm for supporting the actuator.

7. The combination of an engine cylinder, a make and break igniter removably mounted thereon and liable to assume different positions within certain limits, a generator carried by the igniter and removable therewith as a unitary structure, the movable elements of the igniter and generator being operatively connected, an actuator for the said movable elements, a moving part of the engine with which the actuator remains connected while the igniter and generator are removed, and engaging means between the said structure and engine cylinder for permitting the placing of the latter in only one position.

8. The combination of an engine cylinder having an opening, a make and break igniter secured in the opening and liable to assume different positions within certain limits, a generator mounted on the igniter and removable therewith, means for operatively connecting the movable elements of the igniter and generator, a push rod, a trip finger connected with one of the movable elements and with which the actuator is adapted to engage, and means arranged partly on the engine and partly on the igniter and generator structure whereby the push rod and trip finger will be in proper relation to each other each time the igniter and generator structure is replaced after removal from the cylinder.

9. The combination of an engine cylinder, an igniter mounted thereon, a generator mounted on the igniter, means for operatively connecting the movable elements of the generator and igniter to move together, a trip finger connected with the said movable elements, an operating shaft, a push rod adapted to engage the trip finger, means for reciprocating the rod by the shaft, and means whereby the igniter and generator structure can be fastened in only one position where the push rod and trip finger are in proper relation to each other, said means comprising a part on the igniter and generator structure and a part on the engine with which the first part is detachably engaged.

10. The combination of an engine, an igniter mounted on the cylinder thereof, a bracket extending from the igniter, a generator on the bracket, means for operatively connecting the movable elements of the generator and igniter together, a trip finger connected with the movable elements, a push rod adapted to wipe on the trip finger, means for actuating the push rod, an arm extending from the bracket, a support on the arm for the trip rod, and means fixed on the engine with which the arm engages whereby the igniter can be replaced on the engine cylinder in only that position in which the trip finger and push rod are in proper relation.

11. The combination of an engine cylinder, an arm extending laterally from the head thereof, a shaft bearing in the arm, a push rod, and a crank pin connection between the shaft and push rod, with an igniter mounted on the engine cylinder and having its movable electrode operatively related to the push rod, an arm extending from the igniter, and means on the arm of the engine cylinder with which the first-mentioned arm detachably engages for permitting the igniter to be attached in only that position where the push rod and movable electrode are in proper relation, and means on the first-mentioned arm for movably supporting the push rod.

12. The combination of an engine cylinder, an igniter and current generator structure removably mounted thereon, the movable elements of the igniter and generator being operatively connected, a trip finger connected with such movable elements, an arm extending from the igniter, means fixed with respect to the engine cylinder for engagement with the arm whereby the said structure can be fastened in only one position on the cylinder, an actuating push rod arranged to engage the trip finger, means for reciprocating the push rod, and an adjustable support mounted on the arm and on which the push rod moves.

13. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

14. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

15. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

16. The combination of an igniter frame,

comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion motor, sparking electrodes mounted in said body, a magneto generator mounted on said base, means for actuating the said generator to generate current, means for actuating one of the electrodes, and means relatively fixed on said motor for engaging said laterally extending arm.

17. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion engine, sparking electrodes mounted in said body and adapted to make and break a circuit within the combustion chamber of the engine, a magneto-generator mounted on said base, means for actuating the magneto generator to generate current, means for operating one of the lectrodes coöperatively with said generator, a member extensibly mounted in said laterally extending arm, and means secured in relatively fixed relation on the engine to engage said extensible member.

18. In combination, a magneto generator comprising a field magnet, a pair of pole pieces, inductive windings, and a rotor mounted on a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon the release, an igniter frame comprising a body and a shelf extending therefrom and supporting said generator, a stationary insulated electrode and a movable electrode mounted in said body, said movable electrode adapted to make contact with the other said electrode, an arm on said rotor shaft and adapted to coöperate with said arm on movable electrode to so oscillate the movable electrode as to make and break contact with said other electrode, a circuit connecting said windings to said electrodes, and an arm extending from said igniter frame and adapted to engage on a relatively fixed member on the engine associated with said frame.

19. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

20. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

21. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

22. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

23. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

24. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor

for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

In witness whereof, I hereunto subscribe my name this 30th day of October, A. D. 1914.

EMIL PODLESAK.

Witnesses:
B. R. Beckwith,
H. F. Geist.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

ble electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

Count 8. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

Count 9. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

The interference involves your patent above identified and

An application for Electric Igniters, filed by Edmund Joseph Kane, of 123 South Waller St., Chicago, Ill., whose attorneys are Brown, Nissen & Sprinkle, of 312 So. Dearborn St., Chicago, Ill.

The relation of the counts of the interference to the claims of the respective parties is as follows:

Counts.	Kane.	Podlesak.
1	7	13
2	8	14
3	9	15
4	10	19
5	11	20
6	12	21
7	13	22
8	14	23
9	15	24

Copy to Emil Podlesak, Racine, Wis.

Copy to Lynn A. Williams, Monadnock Block, Chicago, Ill.

A. R. Benson, Examiner. A. R. B.

(Here follows patent specification marked side folio pages 964, 965, 966, 967, 968, 969, 970, and 971.)

Mail Room,
Jan. 14, 1915,
U. S. Patent Office.

2097

PETITION

To the Commissioner of Patents:

The petition of Edmund Joseph Kane, a citizen of the United States, residing at Chicago, in the County of Cook, State of Illinois, and whose Post Office address is 123 South Waller Street, Chicago, Ill., prays that Letters Patent may be granted to him for the improvement in Electric Igniters, as set forth in the annexed specification.

And he hereby appoints Brown; Nissen & Sprinkle (a firm composed of Frank T. Brown, Charles M. Nissen & Arthur L. Sprinkle, Registration No. 3604), 1124 Monadnock Block, 312 So. Dearborn Street, Chicago, State of Illinois his attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign the drawings, to receive the Patent, and to transact all business in the Patent Office connected therewith.

Signed at Chicago, in the County of Cook, and State of Illinois, this 11th day of January, 1915.

Edmund Joseph Kane.

(Revenue Stamp.)

SPECIFICATION

To all whom it may concern:

Be it known that I, Edmund Joseph Kane, a citizen of the United States residing at Chicago in the County of Cook and State of Illinois, have invented certain new and useful improvements in Electric Igniters, of which the following is a specification:

My invention relates to magnetic generators for ignition systems of explosive engines, and this application is a division of my prior application for Electric Igniters for Explosive Engines filed February 2, 1910, Serial Number 541,428.

The object of my invention is to provide a simple and efficient device of the character mentioned. A further object is to reduce wear and hammering of the electrical make-and-break contacts, and other parts of the generator.

My improvement consists in substantially the combination and arrangement of parts hereinafter described, shown in the accompanying drawing forming a part of this specification, and more particularly specified in the subjoined claims.

In the drawing:

Fig. 1 is a top view of a magneto generator, shown as attached to fragments of an explosive engine, and embodying my invention.

Fig. 2 is a section taken on line 2—2 of Fig. 1, but showing a larger portion of the cylinder of the engine than in Fig. 1, and showing parts of the magneto cut away in broken lines; and,

Fig. 3 is a fragmentary view of a portion of the device taken as on lines 3—3, in Fig. 1.

My invention is particularly adaptable to the type of magneto generators employing an oscillatory armature or inductor, and in connection with the make-and-break type of ignition systems.

In the drawing, an explosive engine 1, fragments of which are shown, is provided with a suitable opening for the ignition points of a make-and-break system, and around this opening, on the outer side of the cylinder wall, is an ignition block 8, provided with an extension 9 extending through said opening into the cylinder. At the inner end of the extension 9 is carried the fixed contact 10 of the make-and-break system. The electrode 10 is mounted in block 8 and insulated therefrom in the usual manner, such insulation not being shown. At the outer end of the contact member 10 is secured a conductor wire 11, between nuts 12 and 13.

On block 8 is an arm 14 having a bearing member 15 at its outer end. In the bearing member is journaled a shaft 16, which carries the armature or inductor 17. The inductor 17 rotates between the field-cores 18 and 19. The cores 18 and 19 are provided with suitable electrical windings and formed on the pole pieces 20 and 21, and the latter are joined by fixed magnets 22 and 23.

Insert B¹. The pole pieces 20 and 21 are carried on ∧ [an extension 25 formed on the bearing member 14].*

Per B. One end of the conductor 11 is connected to or [a]* is part of the winding on pole-core 19, and the latter is connected to the winding on pole-core 18 in the usual manner, and is not specifically shown. The other end 24 of supporting block

Per B. the winding on pole-core 18 is secured to the [extenat the

" " sion]* 25 [by a]* set screw 25ª ∧ to ground the circuit in the framework of the magneto. A movable contact 26 is adapted to co-operate with fixed contact 10, and is provided with a portion extending through block 8, and in electrical contact therewith. On the outer end of the portion 26 which extends & beyond

" " through ∧ block 8 is fixed an arm 27, and on the extended portion of part 26 is mounted a torsion spring 28 with one end engaging block 8, and the engaging

" " other end ∧ [resting on]* arm 27 in a manner to cause contacts 26 and 10 to normally remain in contact. In the free end of arm 27 is threaded an

[*Words and figures enclosed in brackets erased in copy.]

anvil 29. The anvil 29 is adjustably mounted in the free end of arm 27, so that timing of the engine may be varied slightly by such adjustments.

Secured on the shaft 16 is a yoke member 30, having two arms extending in opposite directions from shaft 16, with one of the arms 30 positioned at one end of anvil 29, and adapted, upon oscillation of shaft 16, to cause movement of the anvil to open

Per B. the contacts 26-10, as will be described later. The arms of member 30 are provided with lateral extensions which are connected to tension springs 31 and 32, said springs being secured at their other ends to brackets 33 and 34 on pole pieces 20 and 21, so that the tension of springs 31 and 32 normally maintains the arm member 30 in a position in striking relation

" " so that one of its arms ∧ [closed]* to the

Insert B[9]. anvil 29 ∧. On the member 30 is an actuating arm 35 adapted to be engaged by a plunger 36. The plunger 36 is actuated from [by]* the crank shaft of the engine, not shown. The end of plunger rod 36 which engages arm 35 is mounted on a flanged roller 38, and the latter journaled on an arm 37 formed on bearing member 15. The plunger 36 is provided with a wedged member or inclined cam surface on member 62, so that upon longitudinal movement of the plunger, the latter will engage arm 35 to oscillate member 30 and arm 35, and after riding on the cam surface will be raised from the arm 35, permitting springs 31 and 32 to restore member 30 to its normal position. Owing to the elasticity of springs 31 and 32 and the momentum of member 30, the latter will be carried slightly past its normal position, and engage anvil 29 and rock contact member 26 away from contact 10 to open the electric circuit. This opening of the circuit pro-

Insert B[2].

Per B. duces the spark for igniting the engine. ∧ The portion of member 30 which engages the bottom of anvil 29 is preferably rounded or curved, in order to effect uniform movement of the arm 27 during the time the member 30 is in contact with anvil 29. The field pieces and inductor are not shown in detail, since their specific parts are not part of this invention. Any suitable field pieces or inductor may be used, as desired.

While I have illustrated and described the preferred form of my invention, I do not desire to be limited to the precise details and arrangement set forth, but desire to avail myself of such variations and changes as may come within the scope of the appended claims.

I Claim: In combination a field magnet, an inductor mounted upon a shaft for oscillation relative to the field magnet, a yoke mounted upon the shaft for oscillation with the inductor, an operating arm carried by the yoke, a reciprocating member driven by an

[*Words and figures enclosed in brackets erased in copy.]

internal combustion engine to engage the operating arm to swing the yoke in one direction, means for disengaging the reciprocating member from the operating arm to permit the oscillating parts to return to their normal position, spring mechanism connected with the diametrically opposite arms of the yoke, to return it to the normal position when relieved of the pressure of the reciprocating member, curved cam surface on one arm of the yoke, a fixed electrical contact and a swinging electrical contact in the combustion chamber of the internal combustion engine, a spindle upon which the swinging contact is mounted, a push finger mounted upon the contact and spindle and carrying an anvil normally disengaged from the cam surface of the yoke but adapted to be engaged by the cam surface upon the overthrow of the oscillating yoke to separate the electrical contacts, and a light spring acting to bring the swinging contact, and the push finger into their normal positions.

2. In a device of the class described, a suitable field magnet, an inductor adapted for oscillating with respect to the field magnet, a yoke rigidly connected with the inductor and having projections at diametrically opposite points, main actuating springs connecting the projections of the yoke with suitable stationary projections on the frame, the said actuating springs tending always to return the oscillating members to their normal positions, a pair of electrical contacts in the combustion chamber of an internal combustion engine, a light spring tending to maintain the closure of said electrical contacts, a push finger adapted when struck to separate the electrical contacts against the tension of the light spring, a curved cam surface on the yoke adapted to engage the push finger upon the overthrow of the yoke when returned to its normal position by the main actuating springs, an operating arm associated with the yoke, and reciprocating mechanism driven by the internal combustion engine to engage the operating arm to swing the yoke and the inductor out of their normal position.

3. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation within the field magnet, a pair of main actuating springs, each connected at one end with the field magnet frame, an integral yoke member rigidly connected with the inductor, the main actuating springs being connected at their free ends with the said yoke member, an operating arm constituting a part of the integral yoke member and adapted to be engaged by a reciprocating member driven by an internal combustion engine, separable contact points within the combustion chamber of the internal combustion engine, a light spring tending to maintain the closure of the electrical contacts, and mechanism adapted to be engaged by a cam surface on the yoke member to cause the separation of said contacts in opposition to the tension of the said light spring.

4. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation therein, spring mechanism tending to return the inductor to its normal position when moved out of said normal position, an operating arm for turning the inductor out of its normal position, a reciprocating actuat-

ing rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod being adapted normally to engage the end of the inductor-operating arm, means for shifting the path of travel of the reciprocating rod to determine its engagement with the operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and a member fixed relative to the inductor adapted to effect the operation of said contacts to create an ignition spark within the combustion chamber of the engine.

5. In a device of the class described, a field magnet, an inductor mounted for oscillation therein, an operating arm for said inductor, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod adapted normally to engage the end of the inductor-operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and an impact member fixed relatively to the inductor adapted to separate said contacts to create a spark in the combustion chamber.

6. In a device of the class described, a field magnet, a shaft, an inductor mounted upon the shaft for oscillation relative to the field magnet, a yoke mounted upon said shaft for oscillation with said inductor, springs tending to retain the inductor and shaft in normal position, an engine-driven member for oscillating said shaft and parts carried thereby, separable electrical contacts within the combustion cylinder of the engine, and an impact member fixed relative to the inductor and shaft arranged to effect the separation of said contacts to create an ignition spark in the combustion chamber of the engine.

Insert A¹.>

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 11th day of January, A. D. 1915.

Edmund Joseph Kane. Witnesses: Arthur L. Sprinkle. Thomas Colson.

OATH

COUNTY OF COOK,
State of Illinois, ss:

Edmund Joseph Kane, the above named petitioner being duly sworn (affirmed), deposes and says that he is a citizen of the United States and resident of Chicago, in the County of Cook, and State of Illinois; that he verily believes himself to be the original, first, and sole inventor of the improvement in Electric Igniters, described and claimed in the foregoing specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or

in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his representatives or assigns in any country foreign to the United States.

Edmund Joseph Kane.

Sworn to and subscribed before me this 11th day of January, A. D. 1915.

Charles H. Seem, Notary Public. [Seal.]

Paper No. 2

March 24, 1915.

Brown, Nissen & Sprinkle, 312 So. Dearborn St., Chicago, Ill.:

Edmund Joseph Kane, S. No. 2097. Filed Jan. 14, 1915. Electric Igniters.

This case has been examined.
Claim 6 is rejected upon
Weber, 820,535, May 15, 1906 (123-149 *s*).

The remaining claims are allowable, as at present advised.
Applicant's attention, however, is directed to
Podlesak, 1,098,052, May 26, 1914 (123-149 *s*), and
Podlesak, 1,055,076, Mar. 4, 1913 (123-149 *s*),

As these may have bearing upon applicant's case.

Benson, Examiner. H. H. G.

Mail Room.
Apr. 17, 1915.
U. S. Patent Office.

U. S. Patent Office,
Apr. 19, 1915,
Division XXVIII.

3

A

In the United States Patent Office

Division 28, Room 63

Edmund Joseph Kane. Electric Igniter. Filed January 14, 1915. Serial No. 2097.

The Commissioner of Patents, Washington, D. C.

SIR: In the above entitled application, and in response to the office letter of March 24, 1915, please amend as follows:—

Add the following claims:—

A¹. 7. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

8. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

9. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

10. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

11. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

12. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extendnig therefrom and upon which the said generator is mounted.

13. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted thereon, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

14. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

15. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

Remarks

The six claims in this application as filed are the claims allowed in the Milton patent No. 1,096,048, granted May 12, 1914, and ap-

plicant desires that an Interference with Milton be declared by the office as soon as practicable.

Applicant notes that the Examiner has rejected claim 6 upon the Weber patent No. 820,535. It must be admitted that at first glance the language of this claim may be thought readable upon the Weber construction, but the claim is considered to be allowable to applicant for the same reasons that it was allowed to Milton, as Milton's structure is identical with that of applicant's, and as the present application is filed as a division of applicant's Serial No. 541,428, filed February 2, 1910, applicant appears to have priority over Milton with respect to filing dates, and desires to contest the claims of the Milton patent in Interference.

Regarding claim 6, which the Examiner has thought met by Weber, attention is called to the fact that this claim specifies "a yoke mounted upon said shaft for oscillation with said inductor." It can hardly be said that Weber has a yoke. A yoke in its ordinary significance means a member that joins two parts or things together, and the part 30 of the Kane application to each of the end branches of which the springs 31, 32 are attached, is properly described as a yoke. This is also true of the member 15 having the lateral branches 16 comprising the yoke of the Milton patent No. 1,096,048 (See Figs. 1 and 4).

Referring now to the Weber construction, we fail to find a yoke in this sense. The only part that compares with applicant's yoke and the Milton yoke, is the radially extending arm 40, which is simply a lever secured to the shaft 15. The lever 40 does not have extension beyond the shaft 15, unless perchance the Examiner has noticed the impact member 41. Attention is called to the fact that the arm 41, however, is not a part of any yoke, because there is no spring secured to the arm 41, nor is there any connection leading therefrom to another spring, as in the Milton device, and in applicant's device.

Furthermore, what is of still greater importance is that claim 6, as drawn, specifies also "springs tending to retain the inductor and shaft in normal position." Weber does not show this structure, but it is one of the characteristic features of applicant's construction, and also that of Milton, because there are springs connected to each of the two branches of the yoke, constantly under tension, or under tension at all times, and tending to retain the yoke and the inductor and the shaft carrying the same, in normal position.

If we look at the Weber construction, we see that he does not have springs tending to hold the arm 40 and the inductor and its shaft in normal position, but he has a single spring 50 coiled around the reciprocating rod 39. This spring 50 must serve the double function of a compression and tension spring, being alternately under tension and compression. This is one of the disadvantages of the Weber construction, as no spring will be entirely satisfactory which must be subjected to alternate compression and tension strains. It is well known that a spring under such conditions is more apt to crystallize and break when subjected to alternate tension and com-

pression strains than when subjected to only one character of strain or work.

For these reasons, it is thought that claim 6 distinguishes the Milton and applicant's constructions over that of Weber, and allowance of the claim to applicant is requested.

Applicant has noted the Examiner's reference to the Podlesak patents, No. 1,098,052 and 1,055,076. Applicant also notes that the patent No. 1,055,076 was re-issued as Re-issue No. 13,878, of February 9, 1915. A careful consideration of the claims of the re-issue patent would indicate that claims 13 to 15, inclusive, and claims 19 to 24, inclusive, read equally as well upon applicant's structure as upon the structure shown in the Podlesak patent. As applicant's original application, of which the present application is a division, was filed long prior to the filing date of the original, applicant has incorporated these claims in the present amendment, and asks that they be entered, and that an Interference with Podlesak, as well as with Milton, be declared as soon as practicable.

Respectfully submitted,

Brown, Nissen & Sprinkle, Attorneys for Applicant. Chicago, Illinois, April 14, 1915.

Mail Room,
May 10, 1915,
U. S. Patent Office.

U. S. Patent Office,
May 11, 1915,
Division XXVIII.

4

In the United States Patent Office

Division 28, Room 63

Edmund Joseph Kane. Electric Igniter. Filed January 14, 1915. Serial No. 1097

The Commissioner of Patents, Washington, D. C.

SIR: Supplementing my amendment of April 14, 1915, I am enclosing a supplemental oath referring to the claims in this case.

Respectfully submitted,

Edmund Joseph Kane, By Brown, Nissen & Sprinkle, Attorneys. Chicago, Illinois, May 8, 1915.

Mail Room,
May 10, 1915,
U. S. Patent Office.

U. S. Patent Office,
May 11, 1915,
Division XXVIII.

In the United States Patent Office

Div. 28, Room 63

Edmund Joseph Kane. Electric Igniter. Filed January 14, 1915. Serial No. 2097

SUPPLEMENTAL OATH

STATE OF ILLINOIS,
County of Cook, ss:

Edmund Joseph Kane, the applicant *of* the application for Letters Patent above identified, being duly sworn, deposes and says that the subject-matter of the fifteen claims now in this application which includes the six original claims and the nine claims numbered 7 to 15 inclusive, submitted in his amendment dated April 14, 1915, and responsive to Office action of March 24, 1915, was part of his invention, was invented before February 2, 1910, the filing date of his original application, Serial No. 541,428, of which the above identified application is a division, was not known or used before his invention, was not patented or described in a printed publication in any country more than two years before February 2, 1910, was not patented in a foreign country on an application filed more than twelve months before February 2, 1910, was not in public use or on sale in this country more than two years before the date of his said original application, and has not been abandoned.

Edmund Joseph Kane. [Seal.]

Sworn to and subscribed before me this 7th day of May, 1915.
Thomas Colson, Notary Public. [Seal.]

Paper No. 5

Aug. 6, 1915.

Brown, Nissen & Sprinkle, 312 So. Dearborn St., Chicago, Ill.:

Edmund Joseph Kane. S. No. 2097. Filed Jan. 14, 1915. Electric Igniters

Case considered as amended April 17, 1915.

An interference will be declared between applicant and patent to Milton, 1,096,048, granted May 12, 1914, on claims 1 to 6 of applicant.

Claims 7 to 15, inclusive, which were made by applicant for the purpose of obtaining an interference with Podlesak, are rejected as lacking foundation. It is noted in this respect that each of the

claims 7 to 15 includes in various terms "an arm on the rotor, an arm on said movable electrode adapted to engage with the first mentioned arm, and spring means for holding said arms in engagement."

It will be noted from applicant's statement respecting the mode of operation of his device that in his structure these arms are not normally in contact, being only in contact when the magneto rotor is carried past the normal position on the return stroke by inertia. See lines 14 and 15, page 4 of applicant's specification.

Applicant's make-and-break contacts are therefore normally in contact and open upon the return stroke of the magneto.

In Podlesak, it will be noted that the arms being in normal contact, his make-and-break contacts are normally open and are only closed momentarily when the rotor reaches the end of its motion just prior to release.

In last line, page 3 of applicant's specification, "closed" should read *close*.

Benson, Examiner. H. H. G.

Paper No. 6

Aug. 24, 1915.

Brown, Nissen & Sprinkle, 312 So. Dearborn St., Chicago, Ill.:

Application of Edmund Joseph Kane. S. No. 2097. Filed Jan. 14, 1915. Electric Igniters

39,013

Count 1. In combination, a field magnet, an inductor mounted upon a shaft for oscillation relative to the field magnet, a yoke mounted upon the shaft for oscillation with the inductor, an operating arm carried by the yoke, a reciprocating member driven by an internal combustion engine to engage the operating arm to swing the yoke in one direction, means for disengaging the reciprocating member from the operating arm to permit the oscillating parts to return to their normal position, spring mechanism connected with the diametrically opposite arms of the yoke, to return it to the normal position when relieved of the pressure of the reciprocating member, a curved cam surface on one arm of the yoke, a fixed electrical contact and a swinging electrical contact in the combustion chamber of the internal combustion engine, a spindle upon which the swinging contact is mounted, a push finger mounted upon the contact and spindle and carrying an anvil normally disengaged from the cam surface of the yoke but adapted to be engaged by the cam surface upon the overthrow of the oscillating yoke to separate the electrical contacts, and a light spring acting to bring the swinging contact and the push finger into their normal positions.

Count 2. In a device of the class described, a suitable field magnet, an inductor adapted for oscillating with respect to the field magnet, a yoke rigidly connected with the inductor and having projections

at diametrically opposite points, main actuating springs connectin
the projections of the yoke with suitable stationary projections o
the frame, the said actuating springs tending always to return th
oscillating members to their normal positions, a pair of electrical co
tacts in the combustion chamber of an internal combustion *chamb*
of an internal combustion engine, a light spring tending to maintai
the closure of said electrical contacts, a push finger adapted whe
struck to separate the electrical contacts against the tension of th
light spring, a curved cam surface on the yoke adapted to engage th
push finger upon the overthrow of the yoke when returned to its no
mal position by the main actuating springs, an operating arm ass
ciated with the yoke, and reciprocating mechanism driven by th
internal combustion engine to engage the operating arm to swing th
yoke and the inductor out of their normal position.

Count 3. In a device of the class described, the combination o
a field magnet, an inductor mounted for oscillation within the fiel
magnet, a pair of main actuating springs, each connected at on
end with the field magnet frame, an integral yoke member rigidl
connected with the inductor, the main actuating springs being con
nected at their free ends with the said yoke member, an operatin
arm constituting a part of the integral yoke member and adapted t
be engaged by a reciprocating member driven by an internal com
bustion engine, separable contact points within the combustio
chamber of the internal combustion engine, a light spring tendin
to maintain the closure of the electrical contacts, and mechanism
adapted to be engaged by a cam surface on the yoke member t
cause the separation of said contacts in opposition to the tension o
the said light spring.

Count 4. In a device of the class described, the combination of
field magnet, an inductor mounted for oscillation therein, sprin
mechanism tending to return the inductor to its normal positio
when moved out of said normal position, an operating arm for turn
ing the inductor out of its normal position, a reciprocating actuatin
rod driven from the shaft of an internal combustion engine, the en
of the reciprocating rod being adapted normally to engage the en
of the inductor-operating arm, means for shifting the path of trave
of the reciprocating rod to determine its engagement with the opera
ting arm, generating windings supported by the field magnet, sep
arable electrical contacts in the combustion chamber of the engine
and a member fixed relative to the inductor adapted to effect th
operation of said contacts to create an ignition spark within the com
bustion chamber of the engine.

Count 5. In a device of the class described, a field magnet, an in
ductor mounted for oscillation therein, an operating arm for sai
inductor, a reciprocating actuating rod driven from the shaft of a
internal combustion engine, the end of the reciprocating rod adapte
normally to engage the end of the inductor-operating arm, genet
ating windings supported by the field magnet, separable electrica
contacts in the combustion chamber of the engine, and an impac
member fixed relatively to the inductor adapted to separate sai
contacts to create a spark in the combustion chamber.

Count 6. In a device of the class described, a field magnet, a shaft, an inductor mounted upon the shaft for oscillation relative to the field magnet, a yoke mounted upon said shaft for oscillation with said inductor, springs tending to retain the inductor and shaft in normal position, an engine-driven member for oscillating said shaft and parts carried thereby, separable electrical contacts within the combustion cylinder of the engine, and an impact member fixed relative to the inductor and shaft arranged to effect the separation of said contacts to create an ignition spark in the combustion chamber of the engine.

The interference involves your application above identified and A patent (No. 1,096,048, May 12, 1914) for Magneto-Generator granted to John Lewis Milton, whose postoffice address is c/o Webster Electric Company, Tiffin, Ohio, and whose attorney is Lynn A. Williams, Monadnock Block, Chicago, Ill.

The relation of the counts of the interference to the claims of the respective parties is as follows:

Counts.	Kane.	Milton.
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6

A. R. Benson, Examiner. H. H. G.

Mail Room,
Aug. 26, 1915,
U. S. Patent Office.

U. S. Patent Office,
Aug. 27, 1915,
Division XXVIII.

8.

In the United States Patent Office.

Division 28, Room 63.

Edward Joseph Kane. Electric Igniters. Filed Jan. 14, 1915.

Serial No. 2097.

The Commissioner of Patents, Washington, D. C.

SIR:

Not Entered.

This communication is in response to the official letter of August 6, 1915.

Page 3 of applicant's specification, in last line, change "closed" to close.

Remarks

Applicant notes that the Examiner will, in due course, declare an interference between applicant and the patent to Milton, Patent No. 1,096,048, granted May 12, 1914, on claims 1 to 6 of the applicant.

The Examiner's attention is called to the fact that the patentee Milton was an employee of the Webster Electric Company, which is the party in interest in the Podlesak patent also. It is believed that the records of the Patent Office, Assignment Division, will also show that the Milton patent is assigned to the Webster Electric Company, and that the same records will show that the Webster Electric Company is the party in interest in the Podlesak re-issue.

[Matter enclosed between rules erased in copy.]

The Examiner's attention is called to the enclosed circular put out by the Webster Electric Company, in which there is a cut on the inside of the first page containing the notice "Podlesak Patents," thus showing that the company which owns or controls the Milton patent is also the chief party in interest in the Podlesak patent. This being the case, the Examiner will see that the applicant would prefer to determine definitely the question of the interference with Podlesak before the interference is formally declared between applicant and the patent to Milton. If further evidence is required by the Examiner, tending to show that the same parties are interested in both of these patents as opposed to the interests of applicant, such evidence will be given in the form of affidavits upon request, and it is hoped that the office will, for the reasons given, delay the declaration of interference between applicant and Milton until the question of the declaration of the Podlesak interference be determined.

The applicant and his attorneys have most carefully considered the Examiner's reasons as set forth in the letter of August 6th, in which the Examiner has rejected the claims made by applicant for the purpose of obtaining an interference with Podlesak, on the ground of "lacking foundation." Applicant is in entire accord with the Examiner with respect to the slight difference in the suggested mode of operation of applicant's device, and the suggested mode of operating the Podlesak device as set forth in the Podlesak specification, but applicant is likewise astounded that the Examiner should reject his claims made for the purpose of securing the interference with Podlesak on the ground that there is a slight difference in operation, when the facts are in the first place that, structurally, Podlesak and applicant are identical. All it is necessary to do with the Podlesak device as shown and described in his patent, to make it operate just as applicant has described the preferred mode of operating his device, is to adjust the anvil or screw 35, which is shown threaded and adjustable in the arm 32, until points 3 and 4 of Podle-

sak (see Fig. 2) come together. Such an adjustment may cause the anvil 35 to be separated from the arm 31 of Podlesak during the period when the rotor is at rest, just as applicant has described the preferred adjustment and manner of operating his device. Now on the other hand, all that it is necessary to do with applicant's device to make it operate like Podlesak, is to adjust the anvil or screw 29 downwardly toward the arm 30 until contact takes place when the rotor is in a state of rest, and since the spring 28 controlling applicant's movable electrode is of less resisting power than the springs of the rotor, obviously the effect of such an adjustment will be to separate the points 10 and 26 just as Podlesak states in his patent he prefers to operate his device. Now as a matter of fact, it matters not just how this anvil is adjusted, and the Kane specification states that it is intentionally made adjustable. On typewritten page 3, beginning at about line 15, it is stated that the anvil 29 is threaded, and "is adjustably mounted on the free end of arm 27, so that timing of the engine may be varied slightly by such adjustments." Of course the applicant did not go ahead and state that, by screwing this anvil down somewhat nearer the limit of its adjustment, he could cause the electrodes to remain out of contact when the rotor is in a normal position, if such a thing was desirable, and he supposed that anyone would know enough to do this when he had provided such an adjustment. The facts are that applicant does not prefer to have his device adjusted so that the points will remain normally separated, and in this connection we would call the Examiner's attention to the fact that it appears that even Podlesak himself does not desire to have the anvil of his device so adjusted that the electrode will remain separated when the rotor is at rest. As proof of this, applicant calls the Examiner's attention to the enclosed circular of the Webster Electric Company, which controls the Podlesak patents and manufactures under them, as will be seen by the notice on the cut on the inside of this circular, and as stated on the third page of the circular where we have underlined it in ink. On the third page of this circular the Examiner's attention is called to the paragraph we have designated by the reference character "Z," as follows: "Igniter points which remain closed at all times except when spark is made, preventing moisture by particles of carbon collecting on them. Hammer blow in opening the points, which gives greatest spark efficiency."

Now the applicant has carefully examined the Podlesak claims, and cannot agree with the Examiner that claims 13 to 15 inclusive, and claims 19 to 24 inclusive, which applicant has made in his case as Nos. 7 to 15 inclusive, are limited to any such feature as the Examiner would imply from the language in the last letter.

Applicant contends that he was the prior inventor of this structure, and he will offer proof of this when the opportunity presents itself, and will attempt to show that he made this invention years prior to the filing of the first Podlesak application upon which this re-issue was based, and that Podlesak was in the employ of the Webster Electric Company, where applicant made his invention, and that Podlesak knew of this invention because it was

communicated to him by applicant. Under these circumstances, therefore, it will be seen that if applicant is denied making these claims on his prior structure, he will be put in the position of having Podlesak later contend that applicant's structure is an infringement of these claims of Podlesak. Applicant has, with his counsel, carefully considered these claims, and is advised by counsel that these claims 7 to 15 inclusive which he has made, do, in fact, read upon his structure. In other words, applicant contends, and is advised by his counsel, that it is not necessary that his anvil shall be adjusted to the position of the anvil shown in the Podlesak patent in order that his structure may be responsive to these claims. Taking up the claims seriatim, it will be seen that every element of claim 7 (Podlesak 13) combined and co-operating for the purpose set forth in the claim, is found in applicant's construction. The "relatively fixed and movable electrodes" 3 and 4 of Podlesak are responded to by the fixed and movable electrodes 10 and 26 of applicant. "An arm on the movable electrode," which is the arm 32 of Podlesak, is the arm 27 of applicant. "A generator having a rotor" is found in the rotor 17 of applicant, which functions exactly as the rotor 20 of Podlesak. "An arm connected therewith," which is the arm 31 of Podlesak, is the arm 30 of applicant. "Spring means tending to hold the *motor* in a given position," which is Podlesak 23, is responded to by either spring 31 or 32 of applicant. "Spring means of less tension than the first mentioned means and operating on the first mentioned arm to hold the same in engagement with the second mentioned arm," is spring 33 which tends to draw the arm 32 of Podlesak toward the arm 31 attached to the rotor, and is found in applicant's construction in spring 28, which normally presses the arm 27 toward arm 30, rigidly secured to the rotor. This would seem to be the only element upon which there could be the slightest quibble, and surely the Examiner does not mean to contend that the spring 28 of applicant does not hold the arm 27, and its anvil thereon, in engagement with the arm 30 which moves with applicant's rotor. It is true that applicant shows the anvil so adjusted that there is a slight gap between the arm 30 and the anvil of the arm 27 when the rotor is perfectly at rest, but the language of claim 7, corresponding to claim 13 of the Podelsak patent, is not limited to a construction in which the arm of the movable electrode is held in contact with the arm on the rotor all the time. It will certainly be sufficient to meet the terms of this claim if this spring functions so as to hold the arm on the movable electrode in engagement with the rotor at any time. Let the Examiner stop and think for a moment what is the function of this light spring 28. Is it not to rotate the movable electrode, and cause the arm 27 to be resiliently sustained and resiliently supported in the direction of the strike arm 30 of the rotor? Insofar as this claim is concerned, it is immaterial whether the points of the electrode rest together when the rotor is at rest, and so resist the action of the comparatively weak spring, or whether the parts be so adjusted as Podlesak shows them in Fig. 3 of the drawing of his re-issue patent, and the arm of the movable electrode contact with the arm

on the rotor before the points come together, thus holding the points normally slightly separated at the time that the rotor is at rest.

The Examiner's attention is called to the fact that, electrically speaking, there is no difference in the operation of these devices, whether the anvils or screws be adjusted so that the gap is between the points of the electrodes when the rotor is at rest, as Podlesak indicates the adjustment in his re-issue patent, or whether the anvils be adjusted so that the gap will take place between the strike arm on the rotor and the anvil on the arm of the movable electrode with the points in contact when the rotor is at rest. It is submitted that it is incorrect for the Examiner to infer that Podlesak's claims are limited to the adjustment that he shows of his parts with the arms "in normal contact." If there is any such limitation as this in claim 13 of Podlesak, which is claim 7 of applicant, the Examiner is respectfully asked to point it out. Finally in considering claims 7 to 13, the Examiner's attention is called to the fact that the element called a trip device, for actuating the rotor, is found in applicant's device just as in Podlesak's, and as to this element it is believed there is no dispute.

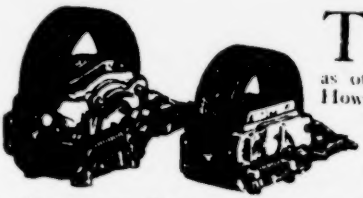
It is not thought necessary to take up the remainder of the claims in detail, except to say that the only possible element of claim 8, which is claim 14 of the Podlesak patent, about which there can be any contention by the Examiner, is the element "spring means of less tension than the first mentioned means and operating on the first mentioned arm to hold the same in engagement with the second mentioned arm." Analyzing this element, it will be seen that applicant's spring 28 is the weaker spring of the two sets of springs, and it operates on the movable electrode arm to hold the same in engagement with the second mentioned arm. The Examiner cannot deny this, because as soon as the trip device operated by the engine, moves the arm on the rotor against the action of the rotor controlling springs, the rotor will return when released, and regardless of how the anvil or screw may be adjusted, the parts will be in contact, and the light spring on the movable electrode will hold the parts in engagement during the rebound or return of the rotor. In this respect the Kane device responds completely to the language of this claim 8, as it does to claim 7, because there is not a word said in the claim that would tend to limit the time that this engagement is to take place, and since it is a positive engagement between the two parts during the return movement of the rotor, it is thought there can be no question but that this claim reads as well upon applicant's device as upon the device of the Podlesak patent, which latter is, in fact, applicant's device.

As supporting applicant's contention, the Examiner's attention is called to claim 15 of the Podlesak patent, applicant's claim 9, which, it is understood, the Examiner has also rejected. The language of the element of this claim under consideration is: "a spring tending to hold the arm of the electrode into engagement with the arm of the rotor." Surely the Examiner will not contend that the light spring on the movable electrode of Kane does not "tend" to hold the arm of the electrode into engagement with the arm of the rotor,

although there may be part of the time that this tendency does n
cause the complete engagement of the parts. It is submitted th
the language of this claim is satisfied when this tendency is sufficie
to bring the parts into engagement during a portion of the moveme
of the parts. In fact, applicant will go even further, and states th
it is believed his construction would satisfy the language of th
claim even though the arm on the rotor and the arm on the movab
electrode never touched each other, if the parts could be so adjust
as to be operated in this way, which, of course, is an absurdity, b
no more absurd than the Examiner's position appears to the appl
cant in holding that these claims have no foundation in applicant
disclosure.

Referring to claim 19, which is claim 10 of applicant, the elemen
"spring means of less tension than the first mentioned means, ope
ating on the first mentioned arm to hold the same in engagemen
with the second mentioned arm" is certainly found in the relativel
weak spring 28 of applicant, which unmistakably holds the electrod
arm in engagement with the arm on the rotor during the return
movement of the rotor, or at least, during a considerable portion o
that movement. This spring holds the parts together as they mov
together to separate the points of the electrode, and prevent the to
rapid separation of the electrodes, and also this spring insures th
return of the electrodes together upon the release of the arm on th
rotor. It is not thought necessary to quote more than a small po
tion of this same language found in claim 20, applicant's No. 11
referring to this same "spring means operating on the first mentione
arm to hold the same in engagement with the second mentione
arm." This is believed to be as completely responsive to applicant's
construction as to the construction of Podlesak for the reasons stated
The Examiner will notice that claim 21, applicant's claim 12, re
ferring to the spring, uses also the word "tending" and for reason
already stated in connection with the discussion of claim 15, it is
submitted this claim should be indicated as allowable to applicant.
Claims 22 and 23 of Podlesak, applicant's claims 13 and 14, both
contain the language: "an arm on said movable electrode adapted to
engage with the first mentioned arm." Of course this is found in
applicant's device just as in the Podlesak device, because applicant's
electrode arm is as much adapted to engage the arm on the rotor as is
Podlesak's. In fact, that is the purpose for which it was designed,
just as Podlesak's arm was designed for that purpose. Claim 13 has
the element: "spring means for bringing the said two arms into
engagement," and this is the light spring which brings the arm of
the movable electrode normally to a position, and holds it in that
position where the arm on the rotor can engage it; and furthermore,
this light spring on the moveable electrode holds the arm thereon in
engagement with the arm on the rotor during the combined return
or rebound movement of the rotor arm, thus showing conclusively
that this spring is the means for bringing the two arms into engage-
ment regardless of how the anvil or screw may be adjusted. The
language of claim 14, Podlesak 23, in this respect is identical with
the language of claim 13, and the language of claim 15, Podlesak 24,
in this respect is similar.

The Wonderful



THE WEBSTER TYPE "K" magneto is of the oscillating type and embodies the same principle as other WEBSTER MAGNETOS. However, it differs in construction and is also considerably smaller. This machine was designed especially for engines of one, two and three horse-power. The WEBSTER MAGNETO is an innovation in the magneto field in view of the fact that it is sold complete with attachments ready to put on the engine. This feature in the smaller magneto, Type "K", will be a big help to engine manufacturers, their jobbers, dealers and the ultimate purchaser. It might be said here that the Webster Company is the only concern which can furnish a complete ignition outfit ready to put on an engine.

WEBSTER MAGNETOS are reasonable in price, especially Type "K", which was produced so that manufacturers who find it necessary to equip their smaller engines with magnetos can do so and have the very best ignition apparatus.

The WEBSTER Type "K" was made possible by the use of the Podlesak patents, the main principle being a tripolar arranged field with a four-pole inductor. With this construction very little motion is necessary to operate the magneto so as to obtain an extremely hot spark. No brushes, moving wires or collector rings are used, so that the machine

The Webster Electric Co.

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Kane
Podlesak } page 81

New Type "K"

is thoroughly water, weather and oil proof. This in itself assures the operator of the engine that he will have a spark under all conditions. Although these features are the leading ones covered by the Podlesak patents, there are numerous others which aid toward the easy handling of an engine.

SPECIFICATIONS.

MAGNETS are of the highest grade Tungsten steel and made in the Webster factory.

SHAFT is one piece ⅞ inch diameter, and ground to size.

INDUCTOR is made of laminated special electric steel and rivered electrically. It is keyed to the shaft by a Woodruff key and cannot possibly shift.

POLE PIECES are made of laminated special electric steel and riveted electrically.

BEARINGS are bronze and lubricated by capillary attraction.

SPIDERS are of bronze.

PUSH FINGER and SPRING ARM drop forged tool steel.

COILS are stationary and are wound of cotton and enamel insulated wire and after being thoroughly processed in insulating varnish are taped and processed again before putting into the machine.

PLUG: By years of experience the Webster Company have proven to the world that mounting the magneto on a bracket which is a part of the igniter plug is the best and simplest practice. The WEBSTER plug is thoroughly covered by patents and we list herewith some of its features:

Three point suspension which allows for the removing and replacing of the plug without changing the timing of the magneto on the engine.

Igniter points which remain cleared at all times except when spark is made, preventing moisture or particles of carbon collecting upon them.

Hammer blow in opening the points which gives greatest spark efficiency.

Positive coil spring which makes it extremely difficult for the movable electrode to stick.

The WEBSTER MAGNETO can be truthfully called the "Crankless Engine Starter" and is equipped with a starting lever which is used to trip the magneto by hand. This feature is used on all types of the WEBSTER line.

WEBSTER MAGNETOS have no moving wires, brushes or rubbing contacts and are not affected by oil or water.

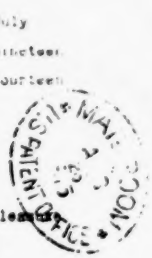
Racine, Wisconsin, U. S. A.

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Kane
v.
Podlesak } page 82.

THE WEBSTER ELECTRIC COMPANY

RACINE, WISCONSIN
U.S.A.

July
Nineteen
Fourteen



Dear Sir

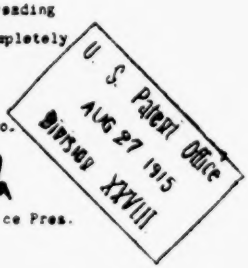
On the following pages we take pleasure in presenting to you information about WEBSTER MAGNETOS, principally, however, type "K".

If you will spend three minutes reading it, we believe you will find that it completely solves your ignition problem.

Yours truly,

The Webster Electric Co.

By [signature] Vice Pres.



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Kane
Poldeck
Page 83.

Reconsideration and allowance of these claims of applicant is requested.

If the Examiner has any difficulty in understanding the mode of operation of applicant's device as explained in connection with the claims above discussed, or if the Examiner is unable to agree to the fullest extent with applicant's position in this matter, applicant requests that the Examiner accord him an opportunity to appear in his presence with his attorney for a hearing in regard to this matter, when a model or full-sized device of the Kane magneto may be produced and operated, and compared with the structure of the Podlesak patent, which latter may also be presented in the form of a model or full-sized device if the Examiner so desires.

Respectfully submitted.

Brown, Nissen & Sprinkle, Attorneys for Applicant. Chicago, Illinois, August 23, 1915.

(Here follow diagrams marked pages 992, 993 and 994.)

Mail Room,
Sep. 3, 1915,
U. S. Patent Office.

Docket Clerk,
Sep. 3, 1915,
U. S. Patent Office.

Serial No. 2097, Paper No. 9.

In the United States Patent Office

Before the Commissioner

Re Application of Edmund Joseph Kane. Electric Igniters. Filed January 14, 1915. Serial No. 2,097

In view of the report of the Ex'r dated Sep. 8, 1915, the petition is denied. Sep. 15, 1915. Thomas Ewing, Commissioner of Patents.

PETITION

To the Commissioner of Patents:

Your petitioner, the applicant in the above entitled application, avers:

First. That on or about August 24, 1915, claims 1-6 inclusive of this application were placed in interference with the patent No. 1,096,048, dated May 12, 1914, for Magneto-Generator, granted to John Lewis Milton, interference No. 39,013.

Second. That the Examiner of Interferences ruled that the statements under Rule 110 in this case must be filed on or before September 27, 1915.

Third. That claims 7-15 inclusive of said application are still being prosecuted before the Examiner of Division 28, with a view of placing said claims 7-15 in interference with re-issue patent No. 13878 for Current Generator and Igniters for Internal Combustion Engines, granted to Emil Podlesak.

Fourth. That the real party in interest in the Milton patent No. 1,096,048, and the real party in interest in the Podlesak re-issue patent No. 13878, are one and the same party; namely, The Webster Electric Company, having offices and factories at Tiffin, Ohio, and Racine, Wisconsin.

Fifth. That if said Milton is given access to applicant's file wrapper and contents before claims 7-15 inclusive in said application are placed in interference with said Podlesak patent or otherwise disposed of, and an interference is declared later between said claims 7-15 and said Podlesak's re-issue patent, the party controlling the Podlesak patent, The Webster Electric Company, will be given access to the file wrapper and contents of applicant before said Podlesak files his statement under Rule 110, thereby defeating Rule 111, and exposing the filing date of applicant's original application, Serial No. 514,428, filed February 2, 1910, of which the above mentioned application is a division, to Podlesak before said Podlesak is entitled to it, to applicant's great injury.

Wherefore your petitioner requests:

First. That the time for filing the statement under Rule 110, and opening of Kane's file wrapper and contents to Milton in interference No. 39013, between Kane and Milton, be extended from month to month until claims 7-15 inclusive of the application above mentioned have been placed in interference with said Podlesak patent or otherwise disposed of, for the reasons mentioned.

Second. That the Examiner of Division 28 be instructed to act as promptly as possible on said claims 7-15 of the above mentioned application, in order to prevent unnecessary delay in the prosecution of interference No. 39013 between Kane and Milton.

Oral hearing of this petition is hereby waived.

Remarks

It is not the purpose of this petition to delay the prosecution of interference No. 39013 between Kane and Milton, but it is the purpose to facilitate the prosecution of claims 7-15 of applicant's application Serial No. 2097, filed January 14, 1915, so that said claims will either be placed in interference with said Podlesak re-issue patent, or otherwise disposed of before applicant's record will be opened to said Milton, for the reason that Milton has licensed The Webster Electric Company, of Tiffin, Ohio, and Racine, Wisconsin, to manufacture Electric Generators under his patent, and that said Podlesak has also licensed said The Webster Electric Company to manufacture Electric Igniters under his patent. It is therefore obvious that, if applicant's record is thrown open to Milton, Podlesak will be apprised of applicant's original filing date before he is entitled to the same.

Soon after the time that applicant made his invention set forth in the above referred to application, he disclosed the same to John L. Milton, the patentee Milton above referred to, and Emil Podlesak, the patentee Podlesak above referred to, who were in the employ of The Webster Electric Company in the Experimental Department thereof. At that time The Webster Electric Company was not interested in this invention, for the reason that there was no demand yet for such Electric Igniters. After the applicant had made a number of his Igniters, and showed the advantages thereof, said Milton applied for his patent, and licensed The Webster Electric Company to manufacture said Electric Igniters. Then later Podlesak made application for his patent, and also licensed The Webster Electric Company to manufacture under his patent. As evidence that The Webster Electric Company is manufacturing under both of these above mentioned patents, applicant is herewith submitting a catalogue published by The Webster Electric Company, entitled "Webster-Milton Low Tension Magneto." In this catalogue is shown a number of views which show applicant's construction very clearly. This catalogue also refers to the Milton patents. Applicant is also enclosing a catalogue published by The Webster Electric Company, entitled "Webster Magnetos." On the front cover of this catalogue is the picture of a Magneto with the words "Podlesak Patents, Simplest" indicated on the picture of the Magnetos. In this catalogue a number of references are made to the Podlesak patents, both on the cuts and in the reading matter. These catalogues show that The Webster Electric Company is the real party in interest in both of these patents, and it is urged that it would not be fair to Kane to have his record exposed to said The Webster Electric Company before an interference was declared between claims 7-15 of this case and the Podlesak patent above referred to, if applicant is entitled to such a declaration of interference on his record. It is therefore urged that Milton be not allowed to see applicant's file wrapper and contents until it is determined whether or not an interference will be declared between applicant's claims 7-15 in the above application and the re-issue patent of Podlesak above mentioned.

To strengthen the contention that both Podlesak and Milton have licensed The Webster Electric Company, an affidavit of your petitioner will be forwarded within a few days, and before this case is reached for action, enumerating such facts as will show the above.

Your petitioner is forwarding in this same mail a stipulation signed by the counsel for Kane and counsel for Milton, stipulating an extension of ten (10) days for filing the statement under Rule 110 in interference No. 39,013. Your petitioner will use every endeavor to co-operate in obtaining a disposal of claims 7-15 of his application, either by having these claims placed in interference with Podlesak or otherwise finally disposed of, in order to facilitate the prosecution of the questions in issue.

Respectfully submitted,

Brown, Nissen & Sprinkle, Attorneys for Kane. Chicago, Illinois, Sept. 1, 1915.

Docket Clerk,
Sep. 7, 1915,
U. S. Patent Office.

Mail Room,
Sep. 7, 1915,
U. S. Patent Office.

Serial No. 2097, Paper No. 10

In the United States Patent Office

Before the Commissioner, on Petition

Re Application of Edmund Joseph Kane. Electric Igniters. Filed January 14, 1915. Serial No. 2097

AFFIDAVIT

Edmund Joseph Kane, the applicant in the above entitled application, being duly sworn, deposes and says that he is informed and believes that The Webster Electric Company, having offices and factories at Tiffin, Ohio, and Racine, Wisconsin, and formerly having a factory and office at Chicago, Illinois, is manufacturing and selling Electric Igniters embodying his invention as disclosed in his application above referred to; that he is informed and believes that said The Webster Electric Company is manufacturing and selling said Electric Igniters under licenses given it by John L. Milton under U. S. Letters Patent No. 1,096,048, and Emil Podlesak under re-issue patent No. 13,878; that he has seen and examined Magneto Generators manufactured by The Webster Electric Company, which bore markings thereon purporting to give notice that such Magneto Generators were made and sold in accordance with said Milton patent, and other Magneto Generators manufactured by The Webster Electric Company, which bore markings thereon purporting to give notice that such Magneto Generators were made in accordance with said Podlesak patent, all of which Magneto Generators embodied applicant's invention as disclosed in his application above mentioned; and that he disclosed his invention as set forth in the above entitled application to both John L. Milton and Emil Podlesak, the above named patentees, long before either Milton or Podlesak made application for their above mentioned patents, and while said Milton and Podlesak were in the employment of The Webster Electric Company, in the Experimental Department thereof, in an endeavor to interest The Webster Electric Company in affiant's invention.

Edmund Joseph Kane.

Sworn to and subscribed before me this 3rd day of September, 1915.

R. P. Madill, Notary Public. [Seal.] My Commission Expires November 8th, 1917.

Letter No. 11

Department of the Interior,
United States Patent Office,
Washington, September 8, 1915.

In re Application of Edmund Joseph Kane. Serial Number 2097.
Filed Jan. 14, 1915. Electric Igniters

Hon. Commissioner of Patents,

SIR: Claims 7 to 15 of this application, which are identical with certain claims in Reissue Patent 13,878 to E. Podlesak, have been rejected on the ground that they lack foundation in this application as filed.

The structure disclosed in this application, by giving a sufficient range of adjustment to the "anvil 29" and by properly proportioning the spring 28 relative to springs 31 and 32, can be made to support the said claims. The specification, however, does not disclose to what extent the "anvil" is adjustable; nor does it disclose the fact that the spring 28 is of less tension than springs 31 and 32. Since the application does not afford sufficient foundation for the claims in question, I think the proposed interference should not be declared.

Respectfully,

A. R. Benson, Examiner.

Div. 28, Room 63.

Mail Room,
Sep. 20, 1915,
U. S. Patent Office.

U. S. Patent Office,
Sep. 21, 1915,
Division XXVIII.

Serial No. 2097, Paper No. 14

In the United States Patent Office

Division 28, Room 63

Edmund Joseph Kane. Electric Igniters. Filed January 14, 1915.
Serial No. 2097

The Commissioner of Patents, Washington, D. C.

SIR: The above entitled application is amended as follows:—
In the description, Page 4, line 14, cancel "and," first occurence. Line 16, before "This," insert—Spring 28 is of less tension than springs 31 and 32, as clearly indicated in Fig. 2, so that contact 26 will be moved away from contact 10 against the influence of spring 28 by member 30 on the return movement of the latter given it by springs 31 and 32 as above mentioned.

Same page, between lines 24 and 25, insert—

In some instances it is desirable to adjust the parts so that the contact 26 is normally out of engagement with contact 10. To make such an adjustment the anvil 29 is adjusted toward member 30 until arm 27 and contact member 26 are moved to separate contact 26 from contact 10. Since spring 28 is of less tension than springs 31 and 32, the latter springs will resist the force exerted by spring 28 on arm 27 and prevent contact 26 from engaging contact 10 while said parts are at rest or in their normal condition. This adjustment of said parts is not shown in the drawing since it will be apparent from the adjustment shown, see particularly Fig. 2. When adjusted as just referred to, spring 28 will move contact 26 into engagement with contact 10 as soon as plunger 36 moves arm 35 and member 30 a short distance. The contacts will be held together by spring 28 until member 30 returns and engages anvil 29 of arm 27 to separate the contacts for forming a spark in the same manner as the first-mentioned adjustment of the parts.

Remarks

This application has been amended to overcome the objection made by the Examiner in his report of Sep. 8, 1915 to the Commissioner of Patents, on Petition. It is thought that this amendment will overcome said objections and provide sufficient foundation for claims 7 to 15 inclusive.

It is noted that in the description as originally filed, it is not specifically stated that spring 28 is of less tension than springs 31 and 32, but in the drawing spring 28 is shown as being made of considerably smaller material than either one of springs 31 and 32. Furthermore, in applicant's original application, Ser. No. 541,428, filed Feb. 2, 1910, of which the present case is a division, a descripton of the action of springs 28, 31 and 32 and their connecting parts is given on page 9 in lines 13 to 25 inclusive. In this original description it is not specifically stated that the spring 28 is of less tension than springs 31 and 32, but it states that member 30 is returned against the influence of spring 28. Since inertia is produced in member 30 by the action of springs 31 and 32, and such inertia causes spring 28 to yield to open the contacts, it necessarily follows that spring 28 must be of less tension than springs 31 and 32. It is therefore thought that this idea is sufficiently disclosed in the original description to merit the specific statement now presented in this amendment relative to the tensions of said springs.

The adjustment referred to in the second paragraph of the amendatory matter of this amendment, does not require formation of any of the parts different from that already shown. This adjustment simply consists in turning the anvil 29 in its threaded connection of arm 27 until the lower end of the anvil moves arm 27 and the shaft portion of member 26 to disengage the contact portion of member 26. It is an elementary proposition that applicant is entitled to such ad-

justments and uses as his device is capable of, and it is therefore urged that he is not setting up any new matter in the matter of the present amendment.

With the adjustment of applicant's device, which is clearly set forth in the second paragraph of the amendatory matter, presented herewith, applicant's device is directly readable on present claims 7 to 15 which are claims 13 to 15 and 19 to 24 inclusive of the reissue patent No. 13,878 dated Feb. 9, 1915, of Emil Podlesak. In view of this fact, it is urged that the interference between this application and the said Podlesak patent, be declared.

It is not thought necessary to add a new figure to the drawing showing the adjustment referred to in the present amendment, since such an adjustment is perfectly obvious from the disclosure of Figs. 2 and 3.

An affidavit executed by applicant is herewith enclosed setting forth the fact that the amendatory matter of the present amendment was part of his original invention.

Respectfully submitted,

Brown, Nissen & Sprinkle, Attorneys for Applicant. Chicago, Ill., September 18, 1915.

Mail Room,
Sep. 20, 1915,
U. S. Patent Office.

U. S. Patent Office,
Sep. 21, 1915,
Division XXVIII.

In the United States Patent Office

Division 28, Room 16

Edmund Joseph Kane. Electric Igniters. Filed January 14, 1915. Serial No. 2,097

SUPPLEMENTAL OATH

Edmund Joseph Kane, the applicant in the above entitled application, being duly sworn, deposes and says that the subject matter of the amendment enclosed herewith and of even date with this oath, was part of his invention, was invented before he filed his original application for such invention, application Serial No. 541,428, filed Feb. 2, 1910, of which the above entitled application is a division, was not known or used before his invention, was not patented or described in a printed publication in any country more than two years before said original application, was not patented in a foreign country on an application filed more than twelve months before said application, was not in public use or on sale in this country more than two years before the date of said application, and has not been abandoned.

Edmund Joseph Kane.

Sworn to and subscribed before me this 18th day of September, 1915.

Thomas Colson, Notary Public. (Seal.)

Docket Clerk,
Oct. 6, 1915,
U. S. Patent Office.

Mail Room,
Oct. 6, 1915,
U. S. Patent Office.

Serial No. 2097, Paper No. 15

Recorded, Vol. 118, Page 44

In the United States Patent Office

Before the Commissioner

On the report of the Exam'r of even date the petition is Denied.
Oct. 9, 1915.

Thomas Ewing, Commissioner of Patents.

In re Application of Edmund Joseph Kane. Electric Igniters.
Filed Jan. 14, 1915. Serial No. 2097

PETITION

The Commissioner of Patents:

Your petitioner, the applicant in the above entitled application, avers—

First, that on September 4, 1915, he petitioned the Commissioner, requesting that the time for filing the statement under Rule 110, and opening of Kane's file wrapper and contents to Milton in interference No. 39013 between Kane and Milton, be extended from month to month until claims 7 to 15 inclusive of Kane's application might be placed in interference with Podlesak's re-issue patent No. 13878, or otherwise finally disposed of, and that the Examiner of Division 28 be instructed to act as promptly as possible on claims 7 to 15 inclusive of Kane's application in order to facilitate the prosecution of interference No. 39013, and set forth his reasons for such request.

Second, that on September 15, 1915, the Commissioner denied said petition, basing his denial on the Examiner's report dated September 8, 1915.

Third, that on September 18, 1915, your petitioner amended his description to overcome the objections pointed out in said Examiner's report, and that said amendment has not been acted upon by the Patent Office to the best of applicant's knowledge and belief.

Wherefore your petitioner requests that the statements under Rule 110 in the interference between Milton and Kane, No. 39,013, be kept sealed, and the file wrapper and contents of Kane's application in said interference be not exposed to the opposite party until after claims 7 to 15 inclusive of Kane's application be finally disposed of before the Primary Examiner in charge thereof.

Oral hearing on this petition is hereby waived.

Remarks

Applicant amended his description to make it state positive features which would make claims 7 to 15 inclusive in applicant's application read as well on his application as on the Podlesak re-issue patent No. 13,878. Accompanying this amendment, in applicant's remarks he pointed out that the matter inserted by this amendment was inferentially set forth in the description and positively shown in the drawings in the original application, of which applicant's present application in said interference is a divison. It s thought that this amendment will overcome any question of whether or not applicant's description discloses the subject matter of claims 7 to 15 inclusive in applicant's application in said interference.

The reason of applicant's request for having claims 7 to 15 inclusive of his application finally disposed of before the statement under Rule 110 and the file wrapper and contents of his applications are open to Milton, was clearly set forth in his petition, which was dated September 1, 1915, and the sworn statement of applicant executed September 3, 1915. With this amendment were also submitted two catalogues published by the Webster Electric Company, which is manufacturing devices under licenses from said Milton and said Podlesak. It is also noted, and is a matter of record, that the attorney for Milton is the attorney for Podlesak in their patents in question. For the above reasons it is requested that Kane's file wrapper and contents and statement under Rule 110 be withheld from Milton until claims 7 to 15 inclusive of applicant's application, Serial No. 2,097, be finally disposed of, so that Podlesak, his attorney of record and the Webster Electric Company, the party of interest in the Mil-

(Podlesak)

ton patent, may not have access to applicant's record until he ^ is entitled to same under Rule 111.

It is therefore urged that this petition be granted and such orders given as will bring about the request of this petition.

Respectfully submitted,

Brown, Nissen & Sprinkle, Attorneys for Applicant. Chicago, Illinois, October 4, 1915.

Commissioner
of Patents.
Received Oct. 9, 1915.

Serial No. 2097, Paper No. 16

In the United States Patent Office

Before the Hon. Commissioner of Patents, on Petition

In re Application of Edmund Joseph Kane. S. No. 2097. Filed Jan. 14, 1915. Electric Igniters

EXAMINER'S STATEMENT

Claims 7 to 15 of the above noted application were rejected Aug. 6, 1915, on the ground that they lacked foundation in the case as filed.

On Aug. 24, an interference involving the said application was declared.

On Sept. 8, 1915, by direction of the Commissioner, the said claims were reconsidered in view of certain arguments advanced by applicant. Said reconsideration, however, failed to change the examiner's opinion on the question of foundation.

On Sept. 20, 1915, applicant presented a proposed amendment to his specification; which amendment, according to office rules, has been placed in the file wrapper of the application, but not yet entered therein.

The proposed amendment and the arguments made in connection therewith have been considered by the examiner, and he is still of the opinion that the original specification does not afford sufficient foundation for claims 7 to 15, inclusive.

A. R. B.

Oct. 9, 1915, Div. 28, Room 63.

Brown, Nissen & Sprinkle, 312 So. Dearborn St., Chicago, Ill.

A. R. Benson, Examiner.

Letter No. 19

Department of the Interior,
United States Patent Office,
Washington, October 18, 1915.

Hon. Commissioner of Patents,

SIR: It is requested that jurisdiction of the application of E. J. Kane, Serial Number 2097, now involved in Interference No. 39,013, be restored to the Primary Examiner for the purpose of placing the

same in interference with the reissued patent No. 13,878 to E. Podlesak. Respectfully,

A. R. Benson, Examiner.

Div. 28, Room 63.

Approved Oct. 18, 1915.

J. T. Newton, First Assistant Commissioner.

Application Room,
Oct. 18, 1915,
U. S. Patent Office.

U. S. Patent Office,
Oct. 18, 1915,
Division XXVIII.

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B

In the United States Patent Office

Div. 28, Room 63

Edmund Joseph Kane. Electric Igniters. Filed January 14, 1915. Serial No. 2097

The Commissioner of Patents, Washington, D. C.

SIR: Conforming to the requirements of the Examiner having this application in charge, as expressed at an oral interview on Saturday, Oct. 16, 1915, in regard to the official letter of August 6, 1915, rejecting claims 7 to 15 inclusive as lacking foundation and as further expressed in the Examiner's Reports of Sept. 8, 1915, and Oct. 9, 1915, on Applicant's petition to The Commissioner, the Applicant requests that the Amendment dated Chicago, September 18th, 1915, be entered in the following modified form:

Page 2, following the word "on" in line 3 from the bottom, erase the remainder of the sentence in this and the following line and insert the following:

B'. √supporting block 25 which is secured by set screw 25^a to the bearing member or bracket on or in which the magneto generator is mounted, thus rendering the magneto generator proper, detachable from its firm supporting base, shelf or bracket formed integrally with ignition block or plug 8 as described.

√Same page, last line, change "a" to is.

√Page 3, line 4, change "extension" to supporting √block.

√Line 5, change "by a" to at the, and after "$25a$" √insert or other suitable fastening means.

√Line 10, after "through," insert and beyond. Lines √12 and 13, change "resting on" to encouraging.

Line 22, change "contact" to contacts. Last line change "close" to in striking relation: and after numeral 29 place a comma and insert;

B[1]. the position of the anvil varying obviously with its described adjustment.

Page 4, line 17 after "engine" insert the following paragraph—

B[2]. By referring to the preferred embodiment of my invention as depicted in the drawing it will be seen that the single spring 28 is, due to the manner of its connection with the movable electrode shaft and the igniter block 8, of the torsional class of springs, while the multiple springs 31, 32, acting cumulatively upon the oscillating yoke member, 30 are tension springs exerting their combined elastic resistance to tension upon yoke member 30 whenever it is oscillated from its normal position of rest. Furthermore, while torsion spring 28 is shown formed of a much smaller grade of spring wire than the multiple tension springs 31, 32, it will also be obvious that its relative tensional relation to the combined springs 31, 32 will be greatly diminished by the system of leverages disclosed in the drawings of these associated parts. For example, torsion spring 28 must exert its reaction upon anvil lever 27 at a point relatively close to the fulcrum of this lever while the combined tension of springs 31 and 32 is exerted upon the outer extremities of yoke 30, one of which parts also forms the striker and comes in direct contact with the anvil 29 on arm 27, so that there is no loss of the reacting power of this pair of springs. This multiplies the effectiveness of springs 31, 32 over the torsion springs 28 many times with the result that in the combination of these elements shown in the drawing the reaction of the combined rotor springs is controlling, and when the momentum of the rotor carries it over center obviously the less effectively arranged single spring 28 will yield allowing the igniter points to separate, but closing them quickly when the rebounding effect of the rotor yoke is withdrawn.

In practice, I prefer to adjust the anvil 29, which as shown in the drawings, is of an old and well known form to those skilled in this art, in relation to movable electrode arm 27 and the striking part of the yoke 30, so that when the yoke is at rest it will not influence the position of the movable electrode arm 27 with the result that normally the electrode points will be in contact, which, as well known to those skilled in this art, is desirable in keeping the contact points of the electrodes free from deposits of carbon or other substances on the interior of the engine cylinder that may interfere with the free discharge of the ignition spark between the contacts. An obvious adjustment, however, of anvil 29 to precisely close the normal gap between it and yoke 30, as

shown, for example in Figs. 2 and 3, will not change the described mode of operation of the igniter points, but if the anvil be still further adjusted toward the yoke after the gap disappears, obviously the anvil 27 will rest normally in contact with the yoke and the igniter points will be normally separated by the increased leverage of springs 31, 32 over springs 28, to be closed momentarily when the rotor yoke is rocked or cocked away from it and afterwards quickly separated by the rebound impact of the yoke on its release from operating plunger 36.—

Arrange that portion of the paragraph following the above insertion, beginning with "The," line 17, page 4, and ending with line 24, same page, as a separate paragraph.

Remarks

In view of the above amendment and the probable change in the Examiner's recommendations, as expressed at the said oral interview Applicant is at this date asking for a rehearing of the petitions to the Commissioner under date of Oct. 4, 1915 and Sept. 1, 1915, respectively.

Since this amendment is believed to introduce no new matter not covered in scope by the amendment of Sept. 18, 1915 (Chicago), not entered, it is believed that the oath accompanying said amendment is applicable to the present amendment without revision, but a new oath will be furnished if thought desirable by the Office.

Respectfully submitted,

Brown, Nissen & Sprinkle, Attorneys for Edmund J. Kane. Washington, D. C., Oct. 18, 1915.

Paper No. 21

Oct. 26, 1915.

Brown, Nissen & Sprinkle, 312 So. Dearborn St., Chicago, Ill.:

Application of Edmund Joseph Kane. S. No. 2097. Filed Jan. 14, 1915. Electric Igniters. Division of Application No. 541,428. Filed Feb. 2, 1910.

39,181

Count 1. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

Count 2. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a gen-

erator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

Count 3. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

Count 4. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

Count 5. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted, and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

Count 6. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

Count 7. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and

123-163 2097

9

1009

Fig 1.

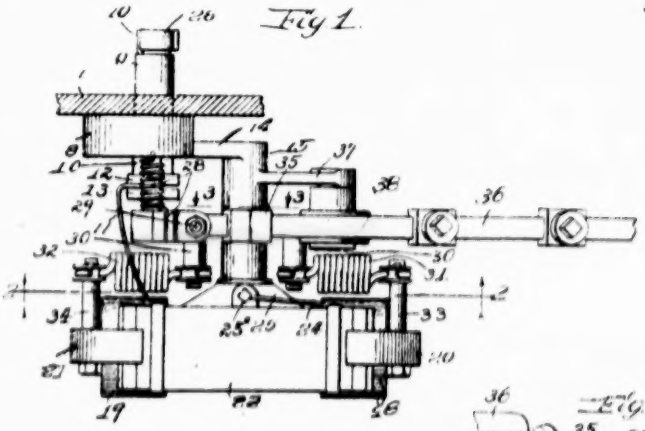


Fig 3.

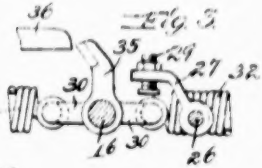
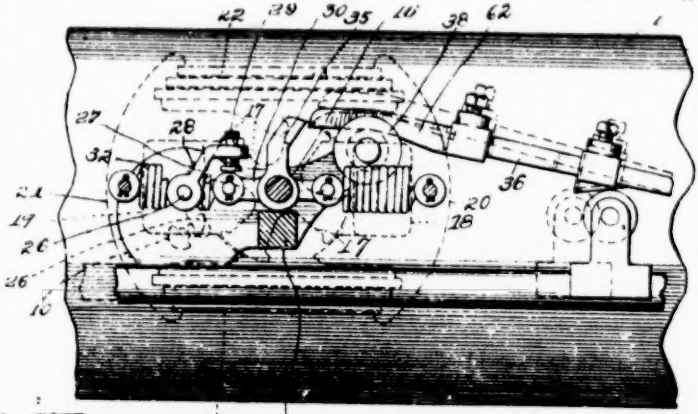


Fig 2.



Witnesses: 23 15

R. L. Farrington

D. Colton

Inventor

Edmund Joseph Kane

by Brown Mason & Langdon

Attys.

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Kane
Pollock } page 109

a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

Count 8. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

Count 9. The combination of an igniter frame, comprising a body and laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

The interference involves your application above identified and A Patent (Reissue No. 13,878, Reissued Feb. 9, 1915) for Current-Generator and Igniter for Internal-Combustion Engines, to Emil Podlesak, of Racine, Wis., whose attorney is Lynn A. Williams, Monadnock Block, Chicago, Ill.

The relation of the counts of the interference to the claims of the respective parties is as follows:

Counts.	Kane.	Podlesak.
1	7	13
2	8	14
3	9	15
4	10	19
5	11	20
6	12	21
7	13	22
8	14	23
9	15	24

A. R. Benson, Examiner. A. R. B.

(Here follows diagram marked page 1009)

Application for U. S. Letters Patent

690,921

$15 Received Apr. 15, 1912. S. Chief Clerk, U. S. Patent Office

Petition

To the Commissioner of Patents:

Your petitioner, Emil Podlesak, a citizen of the United States residing at Tiffin, in the County of Seneca, and State of Ohio, and whose Post Office Address is Tiffin, Ohio, prays that Letters Patent may be granted to him for the improvements in Current Generators and Igniters for Internal Combustion Engines, set forth in the annexed Specification.

And he hereby appoints Chattin Bradway, of Washington, D. C. Victor Bldg., 9th St. & Grant Place, N. W.), Register No. 9477, his Attorneys with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign his name to the drawings, to receive the Letters Patent, and to transact all business in the United States Patent Office connected therewith.

Signed at Tiffin, in the County of Seneca and the State of Ohio this 26th day of March, 1912.

Emil Podlesak.

Specification

To all whom it may concern:

Be it known That I, Emil Podlesak, a citizen of the United States residing at Tiffin, in the County of Seneca, and State of Ohio, have invented certain new and useful improvements in Current Generators and Igniters for Internal Combustion Engines, of which the following is a specification:

B. E.

Emil Podlesak—Current Generator and Igniter for Internal Combustion Engines

This invention relates to igniters of the make and break type and in which the magneto or current generator is combined therewith as a unitary structure that is fastened to the head or other suitable part of the engine cylinder, the rotor of the generator being operatively connected with the movable electrode of the igniter so that a reciprocatory actuator, push rod or equivalent means operating on the rotor trip finger against the tension of spring means causes the rotor to move to "cocked" position while the electrodes of the igniter are brought together, and then released from such "cocked" position so that the electro-motive force generated by the

sudden return movement of the rotor through the magnetic field of the generator will produce the igniting current whereby the spark is produced between the electrodes in the compression chamber of the engine. The combination of means and instrumentalities above referred to is the subject-matter of my pending application for Letters-Patent of the United States, Serial No. 668,153, filed December 27, 1911, and the present invention relates to improvements especially adapted for combined igniters and generators of the type referred to.

The actuating means for the rotor and movable electrode is mounted on the engine cylinder or other suitable part and is operatively connected with some moving mechanism and has no connection with the magneto or igniter since the actuator, which may be a push rod, rotating or oscillatory arm or the like, merely contacts with the trip finger of the rotor. As the igniter and generator must be removed from time to time for cleaning the electrodes and other reasons, it is of great importance that the igniter and generator be replaced in exactly the same position it was before removal; otherwise, the push rod will not be disposed in proper relation to the trip finger of the rotor to accomplish satisfactory results in the operation of the engine, generator and igniter. The reason for this liability of the igniter being replaced in a different position from that which it originally occupied when all the operating parts were adjusted to accomplish the best results, is due to the fact that the holes in the body of the igniter for receiving the bolts or fastening studs are made larger than the bolts or studs, as is also the opening in the engine cylinder for receiving the body of the igniter, this "latitude" between the parts being provided so as to facilitate easy removal of the igniter and to obviate the necessity of careful and expensive machining and fitting of the parts. By reason of the liability to error in replacing the igniter, there is provided an arm or equivalent means on the igniter body to inter-engage with a fixed part on the engine cylinder, so that there can be but one position in which the igniter can be attached to the cylinder, and that position is the one where the push rod or other actuator is in proper relation to the trip finger of the rotor.

As the result of this arrangement, it is never necessary to adjust the relation of the various instrumentalities in replacing the igniter when it has been removed for cleaning or any other purpose.

In addition to the foregoing objects and advantages, the invention has certain other minor advantages which will appear hereinafter as the description proceeds, in reference to the accompanying drawings, in which,

Figure 1 is a front view of the combined igniter and current generator applied to the head of an engine cylinder, part of the generator being shown in section.

Figure 2 is a front view thereof showing a portion of the cylinder head in section.

Figure 3 is a sectional view on line 3—3, Figure 2.

Figure 4 is a diagrammatic view to show the results of a defective positioning of the igniter with respect to the operating push rod.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the head or other wall of a cylinder of an internal combustion engine; B, the make and break igniter; and C, the magneto current generator of the inductor type.

The igniter B comprises a cylindrical body 1 which passes through an opening 2 in the cylinder head A, the opening being of slightly larger diameter than the diameter of the igniter body, so that the latter can be easily inserted or removed. Passing through the igniter body is a fixed electrode 3 with which co-operates a movable or rocking electrode 4. The outer end of the igniter body is formed with a rhomboidal plate 5, which, as shown in Figure 1, has bolt-receiving openings 6 that are slightly larger in diameter than the fastening bolts or studs 7 that pass through the openings and are fastened to the cylinder head A. Thus, there is considerable latitude allowed between the body of the igniter on the one hand and the cylinder head and fastening bolts on the other, and by reason of this, the igniter body is liable to be fastened to the cylinder head in a variety of positions within the limit of this latitude, the disadvantages of which have been hereinbefore pointed out, but are overcome by the improvements later to be set forth.

Extending from the plate portion 5 of the igniter body is a shelf or bracket 8 which forms a base to which the generator C is removably secured by stud bolts 9. Projecting laterally from the bracket or shell 8 is an arm 10 which is formed at its outer extremity with a boss or enlargement 11 that has a passage through which extends an extension rod 12, the rod being fastened in any desired position by a set screw 13 or equivalent means. The outer extremity of this extension rod is located at a considerable distance from the axis of the igniter, and this extremity is adapted to engage some fixed part of the engine, such for instance as lugs 14 on the arm 15 in which the operating shaft 16 rotates. The lugs 14 are spaced apart far enough for the extension rod to enter between them as the igniter body is inserted in the opening in the engine cylinder, and when thus positioned, it is impossible for the igniter body to shift angularly or around its axis and thereby disturb the proper relation of the igniter and generator operating means. The parts 10, 12 and 14 thus constitute means for insuring the proper positioning of the igniter and the design of the parts is such that no special care or adjustment is required in taking off or replacing the igniter.

The generator C is fully set forth in the pending application hereinbefore referred to, so that only a brief description here is deemed necessary. The generator comprises permanent horseshoe magnets 17 fastened to E-shaped pole pieces 18, on the middle projections of which are generating coils 19. In the present drawings, only one pole piece and coil is shown in Figure 1, the other corresponding parts being concealed from view. Between the pole pieces oscillates a cruciform rotor 20 mounted on a shaft 21 which has at one end oppositely-disposed crank arms 22 which are connected with

springs 23 that assume an alining position through the axis of the rotor when the latter is idle, the outer ends of the springs being fastened to studs 24 on the generator frame. On the opposite end of the rotor shaft is a trip finger 25 which is adapted to have a wiping engagement with a push rod 26 or other equivalent actuator, which rod has its end opposite from the trip finger connected with the crank pin 27 of the rotating shaft 16. The push rod or actuator has a combined reciprocatory and rocking movement on a bearing pulley 28 journaled on a support 29 which is fastened by a bolt or equivalent means 30 to the arm 10 of the igniter frame, said bolt forming a pivot on which the member 29 can be adjusted to different positions for bringing the free end of the push rod 26 into proper co-operative relation with the trip finger 25. The trip finger has a tail piece or arm 31 which is adapted to be engaged by an arm 32 fastened to the outer end of the movable electrode 4, the arm 32 being held yieldingly against the arm 31 by a helical extension spring 33 which has one end connected with the arm 32 and the other end anchored at 34 on the igniter frame. To obtain the proper set of the sparking points of the electrodes with respect to the rotor of the generator, one arm, such as 32, has an adjustable screw 35 which engages the arm 31. The spring 33 is of less tension than the return springs 23 of the rotor and is sufficient to maintain the arms 31 and 32 in contact during the first part of the cocking movement of the armature and to maintain the electrodes in contact during the final part of such cocking movement, it being understood that the electrodes are normally separated, and that they come into contact before the rotor or armature finishes its cocking movement, or the position of the rotor shown by dotted lines in Figure 1. At the end of the cocking movement, the push rod 26 slips off the tip of the trip finger, and the springs 23, which have been extended or placed under tension during the cocking movement, quickly snap the rotor back to and beyond its normal position, as indicated by the dot and dash lines, Figure 1. This quick movement of the rotor quickly changes the path of the magnetic flux through the pole pieces and rotor, with the result that a high electromotive force is induced in the generating coils, the maximum electro-motive force occurring at about the time the electrodes are separated during the return movement of the arm 31 of the trip finger, such arm being adapted to strike the arm 32 a hammer blow for effecting a quick separation of electrodes.

By referring to Figure 4, the effect of a defective positioning of the igniter is clearly depicted. Without the use of the positioning controlling parts 10, 12 and 14, it is possible for the igniter to be secured in either the full line position *a* or dotted line position *b*, because of the latitude provided between the igniter body and the bolts and cylinder wall. In other words, the igniter can be fastened to one side or the other of its true central position to an extent corresponding to the angle *d*. Thus, the trip arm of the rotor 25 would be in the dotted line position *c* when the igniter is in the dotted line position *b*, and as a consequence the push rod 26 would not be long enough to operate the trip finger 25, and furthermore

the push rod supporting roller 28 would be raised to the dotted line position c, thereby raising the active end of the trip rod above the tip of the trip finger. When the igniter body is in the full line position a, the trip finger is shifted to the right and the supporting roller 28 is lowered so that the push rod and trip finger will obviously be improperly positioned. These contingencies can be guarded against by providing the arm 10 on the igniter body and having some means on the fixed part of the engine to engage such arm, such means being the lugs 14, as in Figure 1, or a bolt or pin 14^a engaging in the slot 10^a of the arm 10, as in Figure 9.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. The combination of an engine cylinder, a make
Insert A'. and break igniter, $\wedge_{A'}$ an electric generator having its
movable element operatively connected with the movable element of the igniter, an actuator for the movable
Insert A^2. elements of the igniter and generator, $\wedge_{A^2}$ and
in addition to the said fastening means
means $\wedge$ for insuring the correct positioning of the igniter with respect to the actuator when the former is replaced on the engine after
latter
Pr A. removal and for preventing shifting of the igniter, said means comprising engaged parts on the engine cylinder and igniter.

2. The combination of an engine cylinder, an igniter, means for removably fastening the igniter on the cylinder, there being sufficient play between the parts to insure removal of the igniter while rendering the igniter liable to replacement in different positions, an actuator for the igniter requiring a predetermined position of the igniter with respect thereto, and means partly on the
engine
" " igniter and partly on the $\wedge$ [generator]* for insuring such predetermined relative position of the actuator and igniter.

3. The combination of an engine cylinder, an igniter and electric generator forming a unitary structure removably mounted on the cylinder, fastening means for the said unitary structure, said struc-

[*Words and figures enclosed in brackets erased in copy.]

re being liable to replacement in different positions on the cylinder, actuator for the movable elements of the generator and igniter d operatively connected with the moving part of the engine, and in addition to the said fastening means

Pr A. means ∧ for insuring a predetermined relative position of the actuator and movable elements of the igniter and latter

" " generator, said ∧ means consisting of relatively fixed parts of the said structure and engine cylinder which inter-gage when the said structure is in proper position.

4. The combination of an engine cylinder having an opening, igniter disposed in the opening and liable to be fastened in differ- t positions therein, an actuator for the movable electrode of the niter, and means for insuring the proper positioning of the igniter th respect to the actuator, said means comprising a laterally-ex- ding arm on the igniter, and a fixed part on the engine with ich the arm is adapted to engage.

5. The combination of an engine cylinder having an opening, an niter disposed in the opening and liable to be fastened in different sitions therein, an actuator for the movable electrode of the niter, and means for insuring the proper positioning of the igniter th respect to the actuator, said means comprising an arm on the niter, a longitudinally adjustable member on the arm, and a part ed on the engine with which the said member is adapted to re- sably engage.

6. The combination of an engine cylinder, a make and break niter mounted thereon and liable to assume different positions thin certain limits, an actuator for the movable element of the niter, means for moving the actuator, a laterally-extending arm the igniter, and means fixed on the engine with which the arm emovably connected to insure such position of the igniter that the uator and movable electrode will be in proper relation to each er, and means on the arm for supporting the actuator.

7. The combination of an engine cylinder, a make and break niter removably mounted thereon and liable to assume different itions within certain limits, a generator carried by the igniter d removable therewith as a unitary structure, the movable elements the igniter and generator being operatively connected, an actuator the said movable elements, a moving part of the engine with ich the actuator remains connected while the igniter and gen- engaging

Pr A. erator are removed, and ∧ [interlocking]* means be- tween the said structure and engine cylinder for permit- g the placing of the latter in only one position.

8. The combination of an engine cylinder having an opening, a ke and break igniter secured in the opening and liable to assume ferent positions within certain limits, a generator mounted on the niter and removable therewith, means for operatively connecting

*Words and figures enclosed in brackets erased in copy.]

the movable elements of the igniter and generator, a push rod, a t
finger connected with one of the movable elements and with wh
the actuator is adapted to engage, and means arranged part on t
engine and partly on the igniter and generator structure whereby t
push rod and trip finger will be in proper relation to each other ea
time the igniter and generator structure is replaced after remo
from the cylinder.

9. The combination of an engine cylinder, an igniter mount
thereon, a generator mounted on the igniter, means for operativ
connecting the movable elements of the generator and igniter to mo
together, a trip finger connected with the said movable elements,
operating shaft, a push rod adapted to engage the trip finger, mea
for reciprocating the rod by the shaft, and means whereby the igni
and generator structure can be fastened in only one position where t
push rod and trip finger are in proper relation to each other, s
means comprising a part on the igniter and generator structure a
a part on the engine with which the first part is detachably e
gaged.

10. The combination of an engine, an igniter mounted on t
cylinder thereof, a bracket extending from the igniter, a generat
on the bracket, means for operatively connecting the movable el
ments of the generator and igniter together, a trip finger connecte
with the movable elements, a push rod adapted to wipe on the tr
finger, means for actuating the push rod, and arm extending fro
the bracket, a support on the arm for the trip rod, and means fix
engages
P'r B. on the engine with which the arm [engaged]* wherel
the igniter can be replaced on the engine cylinder i
only that position in which the trip finger and push rod are i
proper relation.

11. The combination of an engine cylinder, an arm extendin
laterally from the head thereof, a shaft bearing in the arm, a pus
rod, and a crank pin connection between the shaft and push rod, wit
an igniter mounted on the engine cylinder and having its movabl
electrode operatively related to the push rod, an arm extending fro
the igniter, and means on the arm of the engine cylinder with whic
the first-mentioned arm detachably engages for permitting the ignite
to be attached in only that position where the push rod and movabl
electrode are in proper relation, and means on the first-mentione
arm for movably supporting the push rod.

12. The combination of an engine cylinder, an igniter and cur
rent generator structure removably mounted thereon, the movable
elements of the igniter and generator being operatively connected, a
trip finger connected with such movable elements, an arm extending
from the igniter, means fixed with respect to the engine cylinder for
engagement with the arm whereby the said structure can be fastened
in only one position on the cylinder, an actuating push rod ar
ranged to engage the trip finger, means for reciprocating the push

[*Words and figures enclosed in brackets erased in copy.]

rod, and an adjustable support mounted on the arm and on which the push rod moves.

13. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

14. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, one of the said arms having means for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

15. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a spring connected with the arm, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

16. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion motor, sparking electrodes mounted in said body, a magneto generator mounted in said base, means for actuating the said generator to generate current, means for actuating one of the electrodes, and means relatively fixed on said motor for engaging said laterally extending arm.

17. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion engine, sparking electrodes mounted in said body and adapted to make and break a circuit within the combustion chamber of the engine, a magneto generator mounted on said base, means for actuating the magneto generator to generate current, means for operating one of the electrodes cooperatively with said generator, a member extensibly mounted in said laterally extending arm, and means secured in relatively fixed relation on the engine to engage said extensible member.

Per A.

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18. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion engine, sparking electrodes mounted in said body and adapted to make and break

[Words and figures enclosed in brackets erased in copy.]

the sparking circuit within the combustion chamber of the engine, a magneto generator mounted on said base and arranged to be actuated by said engine to generate current, means for actuating one of the electrodes cooperatively with said generator for making and breaking said sparking circuit, and a member relatively fixed on the engine to engage said base for preventing angular shift of the said frame.

[Matter enclosed between rules erased in copy.]

18 [19].* In combination, a magneto generator comprising a field magnet, a pair of pole pieces, inductive windings, and a rotor mounted on a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon its release, an igniter frame comprising a body and a shelf extending therefrom and supporting said generator, a stationary insulated electrode and a movable electrode mounted in said body, said movable electrode adapted to make contact with the other said electrode, an arm on said movable electrode, an arm on said rotor shaft and adapted to cooperate with said arm on movable electrode to so oscillate the movable electrode as to make and break contact with said other electrode, a circuit connecting said windings to said electrodes, and an arm extending from said igniter frame and adapted to engage on a relatively fixed member on the engine associated with said frame.

In Testimony Whereof I affix my signature in presence of two witnesses.

Emil Podlesák. S. C. Deckner. Hal W. Michaels.

OATH

STATE OF OHIO,
County of Seneca, ss:

Emil Podlesák, the above-named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and resident of Tiffin, in the County of Seneca, and State of Ohio, that he verily believes himself to be the original, first, and sole inventor of the improvements in Current enerators and Igniters for Internal Combustion Engines, described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; that said invention has not been patented in any country foreign to the United States on an application filed by him or his legal representatives or assigns more than twelve months prior to this application; and that no application for patent on said improvement has been filed by him or his repre-

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[*Words and figures enclosed in brackets erased in copy.]

sentatives or assigns in any country foreign to the United States, [except as follows:]*

Emil Podlesák.

Sworn to and subscribed before me this 26th day of March, 1912. Hal W. Michaels, Notary Public, Seneca County Ohio. [Seal.]

Paper No. 2

July 5, 1912.

Emil Podlesak, c/o Chattin Bradway, Victor Bldg., Washington, D. C.:

. No. 690,921. Filed Apr. 15, 1912. Current Generators and Igniters for Internal Combustion Engines

This case has been examined.

Applicant's statement, occurring in the specification, in regard to he fitting of igniters to engine cylinders is queried. It is thought hat in a well constructed engine, the bolt holes of the igniter would e fitted to the bolts well enough to prevent any error in the timing f the igniter.

Claims 1, 3, 7, 8, 9, 10, 11, 12 and 18 are rejected upon Wattles, 90,935, May 2, 1911 (123-149).

It is thought that the stub bolts 32 of Wattles will insure a fit close nough to correctly position the igniter when placed upon the engine ylinder.

Claim 2 is held to be indefinite. It is not clear what is meant in he last three lines of this claim by "means partly on the igniter and artly on the generator."

Claim 7, in addition, is held to be indefinite, it not being clear hat element is covered by the term "interlocking means," occurng in line 9 of this claim.

The remaining claims in the case are allowable, as at present adsed.

Benson, Examiner. H. H. G.

*Words and figures enclosed in brackets erased in copy.]

Application Room,
Nov. 8, 1912,
U. S. Patent Office.

U. S. Patent Office,
Nov. 9, 1912,
Division XXVIII.

3

In the United States Patent Office

Room 63

In re Application of Emil Podlesak. Current Generators and Igniters for Internal Combustion Engines. Serial No. 690,921. Filed April 15, 1912.

A

Honorable Commissioner of Patents.

SIR: In response to the Official communication, the above-entitled application is hereby amended as follows:

Claim 1, line 2, after the comma, insert

A'. "fastening means for securing the igniter in position on the cylinder."

Line 5, before "and" insert

A². —said igniter being removable from the cylinder while the actuator remains in place—.

Same line, after "means" insert —in addition to the said fastening means—. Line 9, before "means" insert —latter—.

Claim 2, line 8, change "generator" to —engine—.

Claim 3, line 8, after "means" insert —in addition to the said fastening means—. Line 10, before "means" insert —latter—.

Claim 7, line 9, change "interlocking" to —engaging—.

Cancel claim 18, and change the ordinal of claim 19 to 18.

Remarks

This amendment is made after a personal interview with the Principal Examiner of Division 28, and it is urged that early action be given to the case, as applicant desires to continue the prosecution to early allowance because of infringement of his invention by others.

With regard to the first paragraph of the Office letter, the best reply thereto is a quotation from applicant's letter regarding the rejection:

"True enough that engines can be so well and accurately constructed that the bolt or stud holes of igniters will so fit the studs as to very much reduce the error in timing of ignition,—said error due to possible shifting in position of the igniter body. However, very

few, comparatively, engines are now-a-days so built; moreover, the operators themselves are in the habit of enlarging the stud holes of igniters fitting close, so that these 'come off' and 'go on' easy, for cleaning, etc."

It will thus be seen that there is a problem to be overcome in igniters of that type which are bodily removable from the engine cylinder, while their actuator remains in place. Applicant has effectively solved this problem and his claims are directed to the means employed therefor.

Now, the reference cited has no particular bearing on applicant's invention, because the patent does not show an igniter which has an actuator or any mechanical means exterior thereto, much less an actuator which remains in position on the engine while the igniter is removed. In the Wattles patent, cited, the igniter is pneumatically actuated and the actuator is in the form of the piston 45 contained in the body of the igniter and operated by the compressed gas in the engine cylinder, the outward movement of the piston 45 operating the movable electrode 39. As the actuator or piston 45 is embodied in the igniter itself, it is removed with the latter as a unitary structure, and hence it makes no difference in what position the igniter is replaced in the engine cylinder when once removed. It is impossible for the operative relation of the piston and movable electrode to be disturbed, but this is not so with applicant's arrangement where the actuator is entirely separate from the igniter and remains in situ while the igniter is removed from the cylinder.

At the interview the Wattles patent was recognized as being insufficient to anticipate the claims, but that claim 1 in its original wording should be amended in certain respects to bring out more clearly the fact that applicant's igniter positioning means is something in addition to the usual bolts or fastening means that secure the igniter in the engine cylinder. Claims 1 and 3 have been amended along this line and are thought to be allowable. The remaining rejected claims, with the exception of claim 18, which has been canceled, are more or less specific to the means for properly positioning the igniter in the cylinder and are clearly allowable over the Wattles patent, for the reasons pointed out at the interview, and for the reasons set forth above.

Favorable and early action is solicited.

Respectfully submitted.

Emil Podlesak. By C. Bradway, Att'y.
Washington, D. C., Nov. 7, 1912.

#4

B

Feb. 18, 1913.

The following changes are made in—
Application Serial No. 690,921 of Emil Podlesak.
Cl. 10 line 9 change "engaged" to "engages"

A. R. Benson, Examiner, Division 28.

1097

1023

E. PODLEŠÁK.

CURRENT GENERATOR AND IGNITER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED APR. 15, 1912.

1,055,076.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 1.

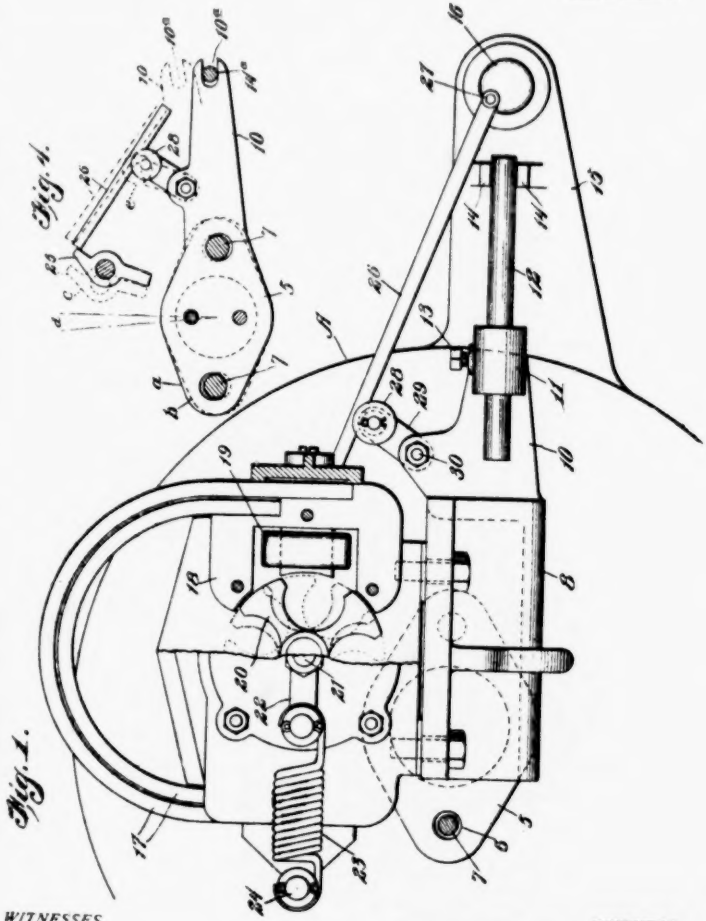


Fig. 1.

Fig. 4.

WITNESSES

Louis R. Heinrichs

A. A. Eze

INVENTOR

Emil Podlešák

By Chatten Bradway Attorney

1098

1024

E. PODLEŠAK.

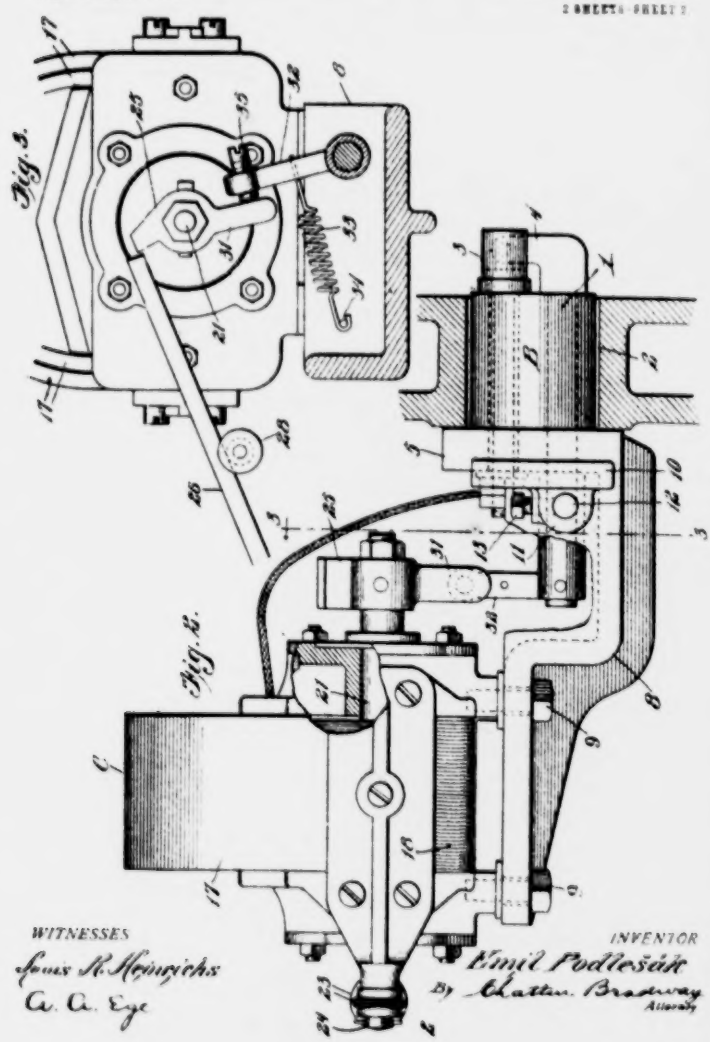
CURRENT GENERATOR AND IGNITER FOR INTERNAL COMBUSTION ENGINES

APPLICATION FILED APR. 15, 1912.

1,055,076.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 2.



WITNESSES

Louis R. Hemrichs

A. A. Eye

INVENTOR

Emil Podlešák

By Chatten Bradway

Attorney

UNITED STATES PATENT OFFICE.

EMIL PODLESAK, OF TIFFIN, OHIO.

CURRENT-GENERATOR AND IGNITER FOR INTERNAL-COMBUSTION ENGINES.

1,055,076. Specification of Letters Patent. Patented Mar. 4, 1913.

Application filed April 15, 1912. Serial No. 690,921. REISSUED

To all whom it may concern:

Be it known that I, EMIL PODLESAK, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful improvements in Current-Generators and Igniters for Internal-Combustion Engines, of which the following is a specification.

This invention relates to igniters of the make and break type and in which the magneto or current generator is combined therewith as a unitary structure that is fastened to the head or other suitable part of the engine cylinder, the rotor of the generator being operatively connected with the movable electrode of the igniter so that a reciprocatory actuator, push rod or equivalent means operating on the rotor trip finger against the tension of spring means causes the rotor to move to "cocked" position while the electrodes of the igniter are brought together, and then released from such "cocked" position so that the electro-motive force generated by the sudden return movement of the rotor through the magnetic field of the generator will produce the igniting current whereby the spark is produced between the electrodes in the compression chamber of the engine. The combination of means and instrumentalities above referred to is the subject-matter of my pending application for Letters-Patent of the United States, Serial No. 668,153, filed December 27, 1911, and the present invention relates to improvements especially adapted for combined igniters and generators of the type referred to.

The actuating means for the rotor and movable electrode is mounted on the engine cylinder or other suitable part and is operatively connected with some moving mechanism and has no connection with the magneto or igniter, since the actuater, which may be a push rod, rotating or oscillatory arm or the like, merely contacts with the trip finger of the rotor. As the igniter and generator must be removed from time to time for cleaning the electrodes and other reasons, it is of great importance that the igniter and generator be replaced in exactly the same position it was before removal; otherwise, the push rod will not be disposed in proper relation to the trip finger of the rotor to accomplish satisfactory results in the operation of the engine, generator and igniter. The reason for this liability of the igniter being replaced in a different position from that which it originally occupied when all the operating parts were adjusted to accomplish the best results, is due to the fact that the holes in the body of the igniter for receiving the bolts or fastening studs are made larger than the bolts or studs, as is also the opening in the engine cylinder for receiving the body of the igniter, this "latitude" between the parts being provided so as to facilitate easy removal of the igniter and to obviate the necessity of careful and expensive machining and fitting of the parts. By reason of the liability to error in replacing the igniter, there is provided an arm or equivalent means on the igniter body to inter-engage with a fixed part on the engine cylinder, so that there can be but one position in which the igniter can be attached to the cylinder, and that position is the one where the push rod or other actuator is in proper relation to the trip finger of the rotor. As the result of this arrangement, it is never necessary to adjust the relation of the various instrumentalities in replacing the igniter when it has been removed for cleaning or any other purpose.

In addition to the foregoing objects and advantages, the invention has certain other minor advantages which will appear hereinafter as the description proceeds, in reference to the accompanying drawings, in which,

Figure 1 is a front view of the combined igniter and current generator applied to the head of an engine cylinder, part of the generator being shown in section. Fig. 2 is a front view thereof showing a portion of the cylinder head in section. Fig. 3 is a sectional view on line 3—3, Fig. 2. Fig. 4 is a diagrammatic view to show the results of a defective positioning of the igniter with respect to the operating push rod.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the head or other wall of a cylinder of an internal combustion engine; B, the make and break igniter; and C, the magneto current generater of the inductor type.

The igniter B comprises a cylindrical body 1 which passes through an opening 2 in the cylinder head A, the opening being of slightly larger diameter than the diameter of the igniter body, so that the latter can be easily inserted or removed. Passing through the igniter body is a fixed elec

trode 3 with which cooperates a movable or rocking electrode 4. The outer end of the igniter body is formed with a rhomboidal plate 5, which, as shown in Fig. 1, has bolt-receiving openings 6 that are slightly larger in diameter than the fastening bolts or studs 7 that pass through the openings and are fastened to the cylinder head A. Thus, there is considerable latitude allowed between the body of the igniter, on the one hand and the cylinder head and fastening bolts on the other, and by reason of this, the igniter body is liable to be fastened to the cylinder head in a variety of positions within the limit of this latitude, the disadvantages of which have been hereinbefore pointed out, but are overcome by the improvements later to be set forth.

Extending from the plate portion 5 of the igniter body is a shelf or bracket 8 which forms a base to which the generator C is removably secured by stud bolts 9. Projecting laterally from the bracket or shelf 8 is an arm 10 which is formed at its outer extremity with a boss or enlargement 11 that has a passage through which extends an extension rod 12, the rod being fastened in any desired position by a set screw 13 or equivalent means. The outer extremity of this extension rod is located at a considerable distance from the axis of the igniter, and this extremity is adapted to engage some fixed part of the engine, such for instance as lugs 14 on the arm 15 in which the operating shaft 16 rotates. The lugs 14 are spaced apart far enough for the extension rod to enter between them as the igniter body is inserted in the opening in the engine cylinder, and when thus positioned, it is impossible for the igniter body to shift angularly or around its axis and thereby disturb the proper relation of the igniter and generator operating means. The parts 10, 12 and 14 thus constitute means for insuring the proper positioning of the igniter and the design of the parts is such that no special care or adjustment is required in taking off or replacing the igniter.

The generator C is fully set forth in the pending application hereinbefore referred to, so that only a brief description here is deemed necessary. The generator comprises permanent horseshoe magnets 17 fastened to E-shaped pole pieces 18, on the middle projections of which are generating coils 19. In the present drawings, only one pole piece and coil is shown in Fig. 1, the other corresponding parts being concealed from view. Between the pole pieces oscillates a cruciform rotor 20 mounted on a shaft 21 which has at one end oppositely-disposed crank arms 22 which are connected with springs 23 that assume an alining position through the axis of the rotor when the latter is idle, the outer ends of the springs being fastened to studs 24 on the generator frame. On the opposite end of the rotor shaft is a trip finger 25 which is adapted to have a wiping engagement with a push rod 26 or other equivalent actuator, which rod has its end opposite from the trip finger connected with the crank pin 27 of the rotating shaft 16. The push rod or actuator has a combined reciprocatory and rocking movement on a bearing pulley 28 journaled on a support 29 which is fastened by a bolt or equivalent means 30 to the arm 10 of the igniter frame, said bolt forming a pivot on which the member 29 can be adjusted to different positions for bringing the free end of the push rod 26 into proper cooperative relation with the trip finger 25. The trip finger has a tail piece or arm 31 which is adapted to be engaged by an arm 32 fastened to the outer end of the movable electrode 4, the arm 32 being held yieldingly against the arm 31 by a helical extension spring 33 which has one end connected with the arm 32 and the other end anchored at 34 on the igniter frame. To obtain the proper set of the sparking points of the electrodes with respect to the rotor of the generator, one arm, such as 32, has an adjustable screw 35 which engages the arm 31. The spring 33 is of less tension than the return springs 23 of the rotor and is sufficient to maintain the arms 31 and 32 in contact during the first part of the cocking movement of the armature and to maintain the electrodes in contact during the final part of such cocking movement, it being understood that the electrodes are normally separated, and that they come into contact before the rotor or armature finishes its cocking movement, or the position of the rotor shown by dotted lines in Fig. 1. At the end of the cocking movement, the push rod 26 slips off the tip of the trip finger, and the springs 23, which have been extended or placed under tension during the cocking movement, quickly snap the rotor back to and beyond its normal position, as indicated by the dot and dash lines, Fig. 1. This quick movement of the rotor quickly changes the path of the magnetic flux through the pole pieces and rotor, with the result that a high electro-motive force is induced in the generating coils, the maximum electro-motive force occurring at about the time the electrodes are separated during the return movement of the arm 31 of the trip finger, such arm being adapted to strike the arm 32 a hammer blow for effecting a quick separation of electrodes.

By referring to Fig. 4, the effect of a defective positioning of the igniter is clearly depicted. Without the use of the positioning controlling parts 10, 12 and 14, it is possible for the igniter to be secured in either the full line position a or dotted line

position *b*, because of the latitude provided between the igniter body and the bolts and cylinder wall. In other words, the igniter can be fastened to one side or the other of its true central position to an extent corresponding to the angle *d*. Thus, the trip arm of the rotor 25 would be in the dotted line position *c* when the igniter is in the dotted line position *b*, and as a consequence the push rod 26 would not be long enough to operate the trip finger 25, and furthermore the push rod supporting roller 28 would be raised to the dotted line position *e*, thereby raising the active end of the trip rod above the tip of the trip finger. When the igniter body is in the full line position *a*, the trip finger is shifted to the right and the supporting roller 28 is lowered so that the push rod and trip finger will obviously be improperly positioned. These contingencies can be guarded against by providing the arm 10 on the igniter body and having some means on the fixed part of the engine to engage such arm, such means being the lugs 14, as in Fig. 1, or a bolt or pin 14ª engaging in the slot 10ª of the arm 10, as in Fig. 9.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. The combination of an engine cylinder, a make and break igniter, fastening means for securing the igniter in position on the cylinder, an electric generator having its movable element operatively connected with the movable element of the igniter, an actuator for the movable elements of the igniter and generator, said igniter being removable from the cylinder while the actuator remains in place, and means in addition to the said fastening means for insuring the correct positioning of the igniter with respect to the actuator when the former is replaced on the engine after removal and for preventing shifting of the igniter, said latter means comprising engaged parts on the engine cylinder and igniter.

2. The combination of an engine cylinder, an igniter, means for removably fastening the igniter on the cylinder, there being sufficient play between the parts to insure removal of the igniter while rendering the igniter liable to replacement in different positions, an actuator for the igniter requiring a predetermined position of the igniter with respect thereto, and means partly on the igniter and partly on the engine for insuring such predetermined relative position of the actuator and igniter.

3. The combination of an engine cylinder, an igniter and electric generator forming a unitary structure removably mounted on the cylinder, fastening means for the said unitary structure, said structure being liable to replacement in different positions on the cylinder, an actuator for the movable elements of the generator and igniter and operatively connected with the moving part of the engine, and means in addition to the said fastening means for insuring a predetermined relative position of the actuator and movable elements of the igniter and generator, said latter means consisting of relatively fixed parts of the said structure and engine cylinder which inter-engage when the said structure is in proper position.

4. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising a laterally-extending arm on the igniter, and a fixed part on the engine with which the arm is adapted to engage.

5. The combination of an engine cylinder having an opening, an igniter disposed in the opening and liable to be fastened in different positions therein, an actuator for the movable electrode of the igniter, and means for insuring the proper positioning of the igniter with respect to the actuator, said means comprising an arm on the igniter, a longitudinally adjustable member on the arm, and a part fixed on the engine with which the said member is adapted to releasably engage.

6. The combination of an engine cylinder, a make and break igniter mounted thereon and liable to assume different positions within certain limits, an actuator for the movable element of the igniter, means for moving the actuator, a laterally-extending arm on the igniter, and means fixed on the engine with which the arm is removably connected to insure such position of the igniter that the actuator and movable electrode will be in proper relation to each other, and means on the arm for supporting the actuator.

7. The combination of an engine cylinder, a make and break igniter removably mounted thereon and liable to assume different positions within certain limits, a generator carried by the igniter and removable therewith as a unitary structure, the movable

elements of the igniter and generator being operatively connected, an actuator for the said movable elements, a moving part of the engine with which the actuator remains connected while the igniter and generator are removed, and engaging means between the said structure and engine cylinder for permitting the placing of the latter in only one position.

8. The combination of an engine cylinder having an opening, a make and break igniter secured in the opening and liable to assume different positions within certain limits, a generator mounted on the igniter and removable therewith, means for operatively connecting the movable elements of the igniter and generator, a push rod, a trip finger connected with one of the movable elements and with which the actuator is adapted to engage, and means arranged partly on the engine and partly on the igniter and generator structure whereby the push rod and trip finger will be in proper relation to each other each time the igniter and generator structure is replaced after removal from the cylinder.

9. The combination of an engine cylinder, an igniter mounted thereon, a generator mounted on the igniter, means for operatively connecting the movable elements of the generator and igniter to move together, a trip finger connected with the said movable elements, an operating shaft, a push rod adapted to engage the trip finger, means for reciprocating the rod by the shaft, and means whereby the igniter and generator structure can be fastened in only one position where the push rod and trip finger are in proper relation to each other, said means comprising a part on the igniter and generator structure and a part on the engine with which the first part is detachably engaged.

10. The combination of an engine, an igniter mounted on the cylinder thereof, a bracket extending from the igniter, a generator on the bracket, means for operatively connecting the movable elements of the generator and igniter together, a trip finger connected with the movable elements, a push rod adapted to wipe on the trip finger, means for actuating the push rod, an arm extending from the bracket, a support on the arm for the trip rod, and means fixed on the engine with which the arm engages whereby the igniter can be replaced on the engine cylinder in only that position in which the trip finger and push rod are in proper relation.

11. The combination of an engine cylinder, an arm extending laterally from the head thereof, a shaft bearing in the arm, a push rod, and a crank pin connection between the shaft and push rod, with an igniter mounted on the engine cylinder and having its movable electrode operatively related to the push rod, an arm extending from the igniter, and means on the arm of the engine cylinder with which the first-mentioned arm detachably engages for permitting the igniter to be attached in only that position where the push rod and movable electrode are in proper relation, and means on the first-mentioned arm for movably supporting the push rod.

12. The combination of an engine cylinder, an igniter and current generator structure removably mounted thereon, the movable elements of the igniter and generator being operatively connected, a trip finger connected with such movable elements, an arm extending from the igniter, means fixed with respect to the engine cylinder for engagement with the arm whereby the said structure can be fastened in only one position on the cylinder, an actuating push rod arranged to engage the trip finger, means for reciprocating the push rod, and an adjustable support mounted on the arm and on which the push rod moves.

13. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

14. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, one of the said arms having means for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

15. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a spring connected with the arm, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

16. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion motor, sparking elec-

trodes mounted in said body, a magneto generator mounted in said base, means for actuating the said generator to generate current, means for actuating one of the electrodes, and means relatively fixed on said motor for engaging said laterally extending arm.

17. The combination of an igniter frame, comprising a body, a supporting base, and an arm extending laterally therefrom, with an internal combustion engine, sparking electrodes mounted in said body and adapted to make and break a circuit within the combustion chamber of the engine, a magneto generator mounted on said base, means for actuating the magneto generator to generate current, means for operating one of the electrodes coöperatively with said generator, a member extensibly mounted in said laterally extending arm, and means secured in relatively fixed relation on the engine to engage said extensible member.

18. In combination, a magneto generator comprising a field magnet, a pair of pole pieces, inductive windings, and a rotor mounted on a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon its release, an igniter frame comprising a body and a shelf extending therefrom and supporting said generator, a stationary insulated electrode and a movable electrode mounted in said body, said movable electrode adapted to make contact with the other said electrode, an arm on said movable electrode, an arm on said rotor shaft and adapted to coöperate with said arm on movable electrode to so oscillate the movable electrode as to make and break contact with said other electrode, a circuit connecting said windings to said electrodes, and an arm extending from said igniter frame and adapted to engage on a relatively fixed member on the engine associated with said frame.

In testimony whereof I affix my signature in presence of two witnesses.

EMIL PODLEŠÁK.

Witnesses:
A. C. Kleckner,
Hal W. Michaels.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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No. 820,535. PATENTED MAY 15, 1906.

G. J. WEBER.

ELECTRIC IGNITER FOR EXPLOSIVE ENGINES

APPLICATION FILED FEB. 16, 1903.

2 SHEETS—SHEET 1.

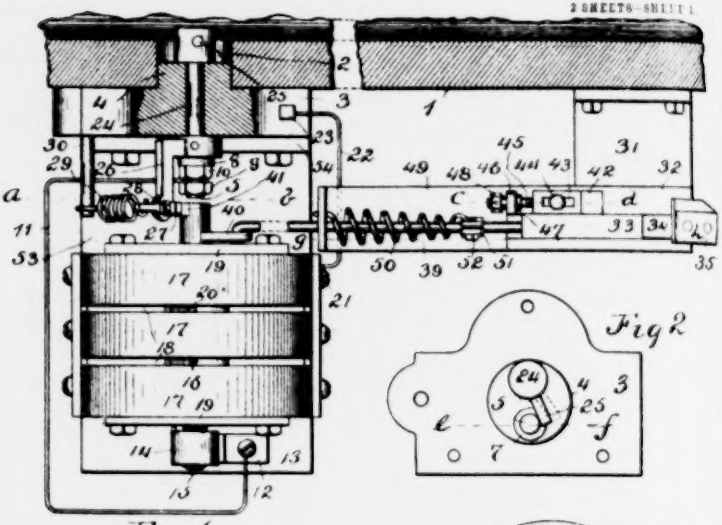


Fig 1

Fig 2

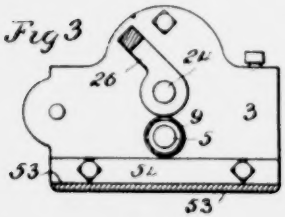


Fig 3

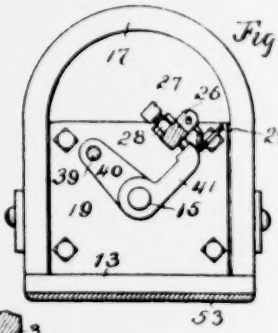


Fig 4.

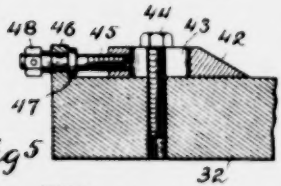


Fig 5

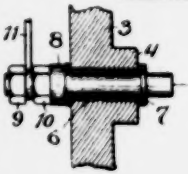


Fig 6

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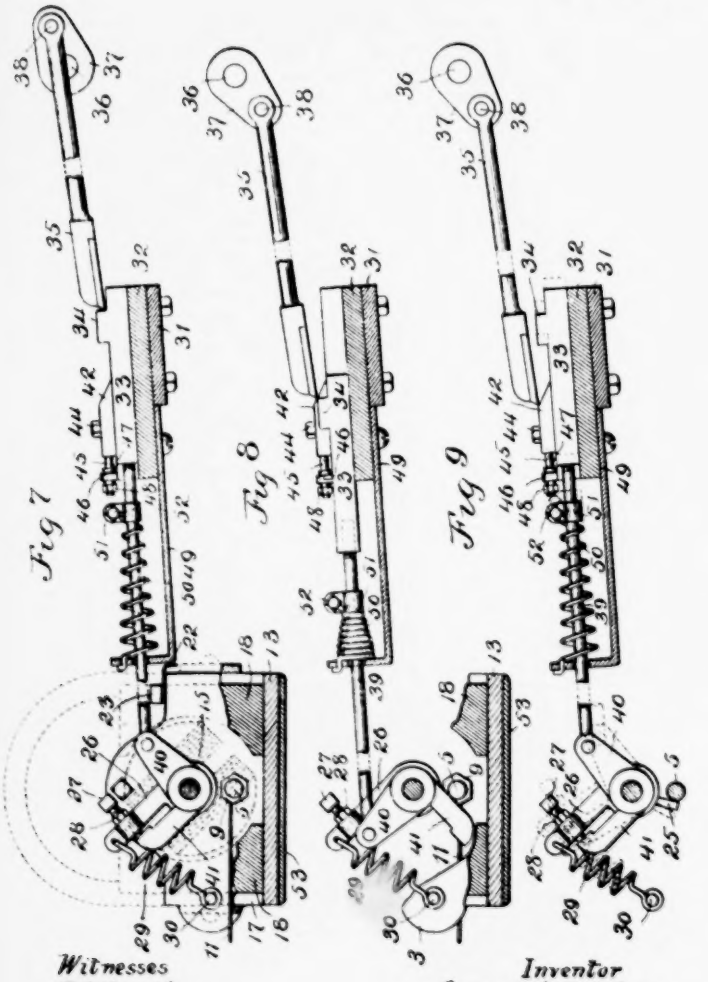
No. 820,535. PATENTED MAY 15, 1906.

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ELECTRIC IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED FEB. 16, 1903.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE

GEORGE J. WEBER, OF KANSAS CITY, MISSOURI

ELECTRIC IGNITER FOR EXPLOSIVE-ENGINES.

No. 820,535. Specification of Letters Patent. Patented May 15, 1906.

Application filed February 16, 1903. Serial No. 143,661.

To all whom it may concern:

Be it known that I, GEORGE J. WEBER, a citizen of the United States of America, residing in Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Improvement in Electric Igniters for Explosive-Engines, of which the following is a specification, reference being had therein to the accompanying drawings, forming a part thereof.

My invention relates to improvements in electric igniters for explosive-engines.

The object of my invention is to provide an electric-igniter mechanism with novel means for producing the spark for firing the charge.

My invention provides, further, certain adjusting means by which the time of producing the spark may be accurately predetermined.

My invention provides, further, timing means adjustable while the engine is running, thus permitting the ignition of the charge at the proper time for obtaining the greatest efficiency from the explosion of the charge.

Other novel features are hereinafter fully described and claimed.

In the accompanying drawings, which illustrate my invention, Figure 1 represents a plan view of the igniting mechanism, some of the parts being broken away and others shown in horizontal section. Fig. 2 is an inside elevation view of the block in which are mounted the two electrodes. Fig. 3 is a vertical sectional view taken on the dotted line *a b* of Fig. 1 looking toward the engine-cylinder. Fig. 4 is a similar view taken on the same dotted line, but looking in the opposite direction. Fig. 5 is a vertical sectional view of the adjustable timing mechanism, taken on the dotted line *c d* of Fig. 1. Fig. 6 is a horizontal sectional view taken on the dotted line *e f* of Fig. 2, showing the stationary electrode and some of the parts connected therewith. Fig. 7 is a view, partially in vertical section and partially in elevation, of the igniting mechanism, the slide and armature-shaft being shown in the retracted position with the reciprocating actuating-arm about to engage and force forward the reciprocating slide. In this view a portion of the magnetic field and parts connected therewith are shown in vertical section, the remainder of the field and the armature being shown in dotted lines. The slide and slide-support in this view are shown partly in elevation and partly in vertical section, the vertical section being taken on the dotted line *g h* of Fig. 1. Fig. 8 is a view similar to that shown in Fig. 7, the armature and portions of the magnetic field being omitted and the slide and parts connected therewith being shown in the positions occupied by them when the timing mechanism has very nearly disengaged the actuating-arm from the slide, the said actuating-arm having moved the slide forward. Fig. 9 represents a view similar to that shown in Fig. 8, the magnetic field and parts connected therewith being omitted and the slide and parts connected therewith being shown in the positions occupied by them after the timing mechanism has released the slide from engagement with the reciprocating actuating-arm. In this figure the furthest retracted positions of the slide and parts connected therewith are shown in dotted lines. The positions occupied by the movable electrode and the crank-arm connected thereto when the electrodes have been separated are also shown in dotted lines.

Similar characters of reference indicate similar parts.

1 indicates the engine-cylinder having a side opening 2. An igniter-block 3 is fitted to the outer side of the cylinder and is provided with an inner extension 4, fitted in the opening 2. In a horizontal opening through the block 3 extends a stationary electrode 5, insulated by a sleeve 6 of insulating material from the block 3. The ends of the sleeve 6 are provided with peripheral flanges. Against the flange at the inner end rests the rear side of a flange 7, provided on the inner end of the electrode 5, which is located in the opening 2 of the cylinder. Outside the block 3 on the electrode 5 is mounted a washer 8, which rests against the outer flange upon the sleeve 6. The outer end of the electrode 5 is screw-threaded and has mounted thereon two nuts 9 and 10, the inner one, 10, resting against the washer 8. Between the nuts 9 and 10 is clamped a wire 11, which is also secured to a commutator-brush 12, one end of which is secured to a horizontal non-magnetic plate or board 13. The other end of the commutator-brush bears upon a sleeve 14, rotatable with but insulated from the armature-shaft 15, on which is mounted the armature 16. The magneto machine may be of the ordinary Siemens magneto-electric type having horse-shoe-shaped permanent magnets 17, to which

are attached soft-iron pole-pieces 18. At the ends of the pole-pieces 18 are secured the two vertical shaft-bearing plates 19, in which the horizontal shaft 15 is rotatably mounted. The armature may be wound in the manner common to this type. One end of the winding (indicated by 20) is connected to the insulated sleeve 14 and the other end connected to the armature-shaft, the circuit being completed to the block 3 through the bearings 19, one of the pole-pieces 18, screw 21, mounted in a screw-threaded hole in the pole-piece, thence by a wire 22, one end of which is secured to said screw 21, the other end being secured to the screw 23, mounted in a screw-threaded hole in the upper side of the block 3. Parallel with and above the electrode 5 is mounted in a horizontal hole extending through the block 3 the rock-shaft 24, in the inner end of which is secured radially an electrode 25, adapted to bear upon the inner end of the electrode 5. Upon the outer end of the rock-shaft 24 and rotatable therewith is a crank-arm 26, upon the outer end of which in a screw-threaded opening provided therefor is mounted an adjusting-screw 27, which extends transversely through the crank-arm and has mounted thereon a lock-nut 28, adapted to bear against the said crank-arm. To the crank-arm 26 is secured one end of a coil-spring 29, the other end of which is secured to a pin 30, extending horizontally rearwardly from the block 3.

The rock-shaft 15, together with the armature 16, is oscillated to and fro by the following mechanism. A horizontal bracket 31 to the right of the igniter-block 3, as viewed in Fig. 1, is secured at its inner end to the outside of the cylinder 1 and has mounted upon its upper side a slide guide or support 32, the upper side of which is provided with a groove disposed at right angles to the armature-shaft 15. In said groove is reciprocatively mounted a slide 33, provided on its upper side with a projection 34, adapted to be engaged by the free end of a reciprocating arm 35, the opposite end of which is connected with mechanism controlled by the running of the engine and designed to reciprocate the said arm 35.

In Figs. 7, 8, and 9 I have shown a mechanism adapted for this purpose, in which 36 indicates the rotatable crank-shaft of the engine. Upon said crank-shaft is mounted and rotatable therewith a crank-arm 37, having a crank-pin 38, pivotally fitted in a transverse hole provided in the arm 35. As the crank-shaft 36 is rotated the arm 35 will be reciprocated by means of the crank-arm 37 and pin 38. To the left end of the slide 33, as viewed in Figs. 1, 7, 8, and 9, is secured in a screw-threaded opening provided in said slide the screw-threaded end of a rod 39, the other end of which is pivotally connected to a crank-arm 40, rigidly secured upon the inner end of the armature-shaft 15. A hammer-arm 41 is also secured upon the said armature-shaft. The outer end of the said hammer-arm 41 is so disposed that when the armature-shaft is retracted in the proper direction it will come in contact with the adjusting-screw 27 in the crank-arm 26 and move the said crank-arm 26 in a direction such that the electrodes 5 and 25 will be separated from each other, as shown in dotted lines in Figs. 2 and 9. Upon the upper side of the slide-support 32 is secured the timing device, by which the arm 35 is disengaged from the projection 34 of the slide 33. Various means may be employed for causing such disengagement.

In the form illustrated in the drawings I have provided a plate 42, disposed parallel with and at one side of the slide 33. The right end of the said plate 42, as viewed in Figs. 1, 7, 8, and 9, is inclined upwardly to the left, said inclined portion being at its upper end in a higher plane than the upper surface of the projection 34. The free end of the reciprocating arm 35 is so disposed as to come in contact with the inclined portion of the plate 42 and by the said plate made to rise and clear the projection 34 at the proper time when disengagement of the arm 35 from the projection 34 is desired. In order that such disengagement may be made to occur at any desired time, I have designed means by which the plate 42 may be adjusted lengthwise. For this purpose the plate 42 is provided with a vertical longitudinal slot 43, in which is mounted a vertical guide-screw 44, the lower end of which is fitted to a vertical screw-threaded hole provided in the slide-support 32. The left end of the plate 42, as viewed in Figs. 1 and 5, is provided with a longitudinal screw-threaded hole, in which is fitted the right screw-threaded end of an adjusting-screw 45, which is rotatively mounted in a transverse hole provided in a vertical projection 46 on the upper side of the slide-support 32. The said adjusting-screw 45 is provided at the right of the projection 46 with a peripheral flange 47 for preventing lengthwise movement of the said screw in one direction. Movement in the opposite direction is prevented by means of a collar 48, rigidly secured upon the said adjusting-screw and bearing upon the left side of the projection 46. By turning the said adjusting-screw 45 in the proper direction the plate 42 may be adjusted longitudinally to the proper position, after which the guide-screw 44 is turned so as to cause the head thereof to bear tightly upon the upper side of the plate 42, thus insuring the permanent disposition of the plate 42 in the place desired.

Secured to the left end of the slide-support 32, as viewed in Figs. 1, 7, 8, and 9, is a slightly-inclined plate 49, the left end of which is bent upwardly at right angles and is

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provided in such bent portion with a transverse hole through which the rod 39 may be reciprocated. Encircling the rod 39 is a coil-spring 50, one end of which is secured to the bent portion of the plate 49, the other end being secured to a longitudinally-adjustable split sleeve 51, mounted on the rod 39 and adapted to be rigidly secured thereto after it has been properly adjusted by means of a transverse screw 52, rotatively mounted in oppositely-disposed holes in the split portion of the said sleeve 51. In one of said holes the said screw 52 has no screw-thread engagement; but the other of said holes is screw-threaded and fitted to the said screw. By turning the said screw 52 in the proper direction the sleeve 51 may be loosened upon the rod 39, adjusted longitudinally thereon to the proper position, and then rigidly secured in position by tightening the screw 52.

The tension of the spring 50 is such that after the spring has been compressed, as shown in Fig. 8, and then permitted to become extended, as shown in Fig. 9, through disengagement of the arm 35 from the projection 34 the said spring 50 will force the slide 33 and rod 39 to the right, thus oscillating the armature-shaft 15 in a direction such that the hammer-arm 41 will come in contact forcibly with the end of the adjusting-screw 27. The inertia of the slide 33, together with the force of the spring 50, will force the parts into the position shown in dotted lines in Fig. 9—that is, the hammer-arm 41 will force the crank-arm 26 to move in a direction such that the electrodes 5 and 25 will become separated. After the inertia of the slide 33 has been overcome the spring 29 and the spring 50 will cause a retraction of the parts into the position shown in solid lines in Fig. 9, in which position the electrodes 5 and 25 will again come in contact, thus completing the electric circuit.

In operating my invention, the parts having been assembled as described and the parts adjusted so that the electrodes 5 and 25 will be separated at approximately the proper time, the engine is started. As the engine crank-shaft 36 is rotated the slide 33 will be moved to the left, as viewed in Figs. 1, 7, 8, and 9, by the mechanism already described to the position shown in Fig. 8. In this position the armature-shaft will be oscillated in a direction such that the hammer-arm 41 will be as shown in Fig. 8. In the meantime the free end of the arm 35 will have been raised by the inclined portion of the plate 42, so as to nearly clear the projection 34. Continued movement forward of the arm 35 will cause it to be cleared from the projection 34, and the slide 33 will then be retracted by the spring 50 to the positions shown in Fig. 9, thus causing the hammer-arm 41 to strike the screw 27 and force the electrodes 5 and 25 apart, as already described. While the armature-shaft 15, slide 33, and parts connected therewith are being retracted from the positions shown in Fig. 8 to those shown in Fig. 9, the armature 16, carried by the shaft 15, will be oscillated so as to pass from one pole-piece 18 toward the opposite pole-piece. This movement of the armature will cause a current to be generated in the armature-winding 20, the said current passing in one direction or the other in the circuit in which the armature-winding is located, the direction depending upon the polarity of the pole-pieces and the manner of winding the wire on the armature. If the current passes first from the winding 20 to the commutator 14, it will pass from thence to the wire 11 by means of the brush 12, thence through the electrodes 5 and 25 to the igniter-block 3, thence by the screw 23, wire 22, screw 21, pole-piece 18 to bearings 19, thence by armature-shaft 15 to the end of the armature-winding which is secured to the said shaft. The crank-arms 26 and 41 are so adjusted upon their respective shafts that the screw 27 will be struck by the crank hammer-arm 41 at a time when the current generated in the circuit will be near its maximum strength. The hammer-arm 41 striking the anvil mechanism, consisting of the screw 27 and the crank-arm 26, will cause the electrode rock-shaft 24 to oscillate, so as to separate the electrodes 5 and 25 at the time when the strength of the electric current in the circuit is at its maximum strength. The timing mechanism, of which the plate 42 forms a part, will be so adjusted that when the spark occurs, due to the separation of the electrodes 5 and 25, the charge in the cylinder 1 will be very near its maximum compression. The time of separating the electrodes may be further regulated by adjusting the sleeve 51 longitudinally on the rod 39. The more compression given the spring 50 by moving the sleeve 51 in the proper direction the quicker the electrodes will be separated, as the spring 29 will be sooner overcome and permit a movement of the crank-arm 26. By adjusting the screw 27 the time for separating the electrodes may also be varied. After the engine has begun to run at its regular speed the adjustment of the time for producing the spark between the electrodes 5 and 25 may be obtained with great exactness, so that the charge may be fired at the exact time required for the greatest efficiency. To make this adjustment while the engine is running, the clamping-screw 44 is slightly loosened and the screw 45 turned in a direction such that the plate 42 will be moved to the right or left, as it may be desired, in order to disengage the arm 35 from the projection 34 sooner or later. It will be understood that if the engine is to be run at a rapid speed it is necessary to fire the charge sooner than when the engine is running at a slower speed. So when it is desired to increase the speed of

the engine to secure the greatest efficiency from the expansive force of the charge in the cylinder it becomes necessary to fire the charge earlier. This may be done, as described, while the engine is running by turning the screw 45 in the proper direction to advance the plate 42 toward the arm 35, after which the screw 44 is tightened to preserve the adjustment obtained.

Any one versed in the art will understand the great advantage of being able to adjust the time of firing the charge while the engine is running at its regular working speed, as at this time the operator can exactly determine the proper time for producing the firing-spark.

In order that the crank-arm 26 and the hammer-arm 41 may hold their relative positions with respect to each other intact, I prefer to mount the plate or board 13 upon a horizontal bracket 53, the inner end of which is provided with a vertical flange 54, secured rigidly to the igniter-block 3. The igniter-block 3, which is such as are commonly used in engines of this type, may be sent, together with the magneto-electric machine and some of the parts connected therewith, and fitted to an engine in lieu of a similar igniter-block provided with another sparking mechanism. The bracket 31, together with the parts mounted thereon, may also be sent from the factory ready to mount on an engine already set up. In such cases it is but necessary to connect the rod 39 to the crank-arm 40 after the brackets 53 and 31 are secured in place.

The rod 39 being quite long and slender, lack of sufficient space on the sheet preventing its full length being shown, the end connected with the crank-arm 40 can yield the amount required to follow the arc described by the said crank-arm in oscillating to and fro.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, of means for normally holding the electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, means for moving the slide in the opposite direction, means for oscillating the armature by means of the slide, means for separating the electrodes when the slide is moved in said opposite direction, and means for timing the movement of the said slide in said opposite direction.

2. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, of means for normally holding the said electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, a spring for retracting the slide, means for oscillating the armature by means of the slide, adjustable timing means for determining the time of retracting the slide, and means for separating the electrodes when the slide is retracted.

3. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, one of which is movable, of means for normally holding the said electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, a spring for retracting the slide, means for oscillating the armature by means of the slide, timing means adjustable independently of the running of the engine for determining the time of retracting the slide, and adjustable means for separating the electrodes when the slide is retracted.

4. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes one of which is movable relative to the other, of means for normally holding the electrodes in contact with each other, a magnetic field, an oscillatory armature located in said field and included in said circuit, a reciprocating slide, means by which the armature is oscillated by means of the slide, means controlled by the running of the engine for moving the slide in one direction, means for retracting the slide in the opposite direction and two arms, one oscillatory with the armature and the other mounted on the movable electrode the said two arms being so disposed that the arm carried by the armature will strike the electrode-arm and cause a separation of the electrodes when the slide is retracted.

5. In igniters for explosive-engines, the combination with an oscillatory armature-shaft, of a hammer-arm oscillatory therewith, a reciprocating slide, means controlled by the running of the engine for moving the slide in one direction, spring-actuated mechanism for retracting the slide, timing means controlling the retraction of the slide, means for oscillating the armature-shaft by means of the slide, two electrodes, one fixed and the other movable, the movable electrode being provided with an arm, an adjusting-screw rotatably mounted in said arm and adapted to be struck by the hammer-arm when the armature-shaft is retracted, and means for normally holding the two electrodes in contact with each other.

6. In igniters for explosive-engines, the

combination with an electric circuit having included therein two electrodes, of means for holding the electrodes normally in contact with each other, an oscillatory armature, a reciprocating slide, means for oscillating the armature by means of the slide, a reciprocating actuating device reciprocated by the running of the engine and provided with means for engaging and moving the slide in one direction, a tripping device for releasing the slide from the actuating device, means for retracting the slide, and means for separating the electrodes when the slide is retracted.

7. In igniters for explosive-engines, the combination with an electric circuit having included therein two electrodes, of means for holding the electrodes normally in contact with each other, an oscillatory armature included in the said circuit, a reciprocating slide, means for oscillating the armature by means of the slide, a reciprocating actuating device reciprocated by the running of the engine and provided with means for engaging and moving the slide in one direction, an adjustable tripping device for releasing the slide from the actuating device, means for retracting the slide when the same is released from the actuating device, and means for separating the electrodes when the slide is retracted.

8. In igniters for explosive-engines, the combination with an electric circuit of two electrodes one of which is movable toward and from the other, means for normally holding the electrodes in contact with each other, an oscillatory armature provided with a wind-ing included in the said circuit, an oscillatory shaft on which the armature is mounted, a crank carried by said shaft, a reciprocating slide, a rod connecting said slide and said crank, a magnetic field in which the armature is located, means controlled by the running of the engine for moving the slide in one direction, means for retracting the slide in the opposite direction, adjustable timing means for determining the time of retraction of the slide, and means for separating the electrodes when the slide is retracted.

In testimony whereof I have signed my name to this specification in presence of the two subscribing witnesses.

GEORGE J. WEBER.

Witnesses:

WARREN D. HOUSE,

JESSIE R. COMSTOCK.

1022

L. H. WATTLES.

SPARKING IGNITER.

APPLICATION FILED JUNE 1, 1910.

1038

990,935.

Patented May 2, 1911.

3 SHEETS-SHEET 1

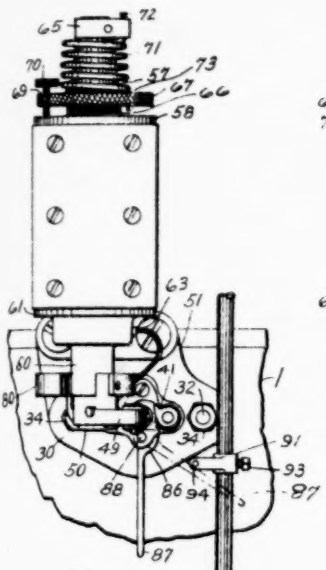


Fig. 1

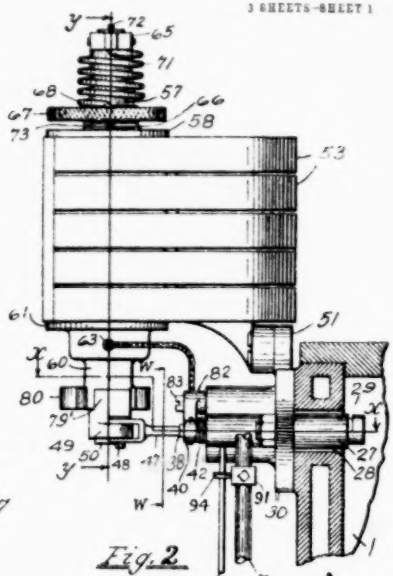


Fig. 2

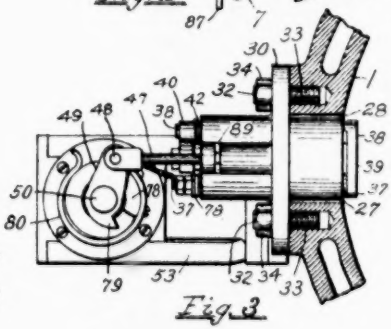


Fig. 3



Fig. 4

Witnesses:
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Horatio E. Billows

1039

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SPARKING IGNITER.

APPLICATION FILED JUNE 1, 1910.

990,935.

Patented May 2, 1911.

3 SHEETS—SHEET 2.

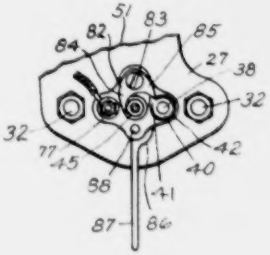


Fig. 5

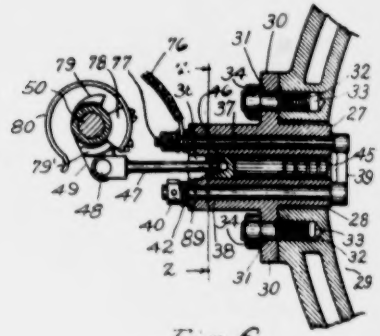


Fig. 6

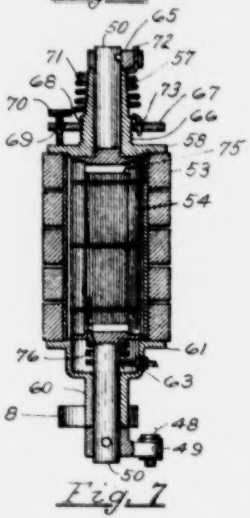


Fig. 7

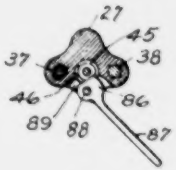


Fig. 8

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1024

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SPARKING IGNITER.

APPLICATION FILED JUNE 1, 1910.

1040

990,935.

Patented May 2, 1911.

3 SHEETS—SHEET 3.

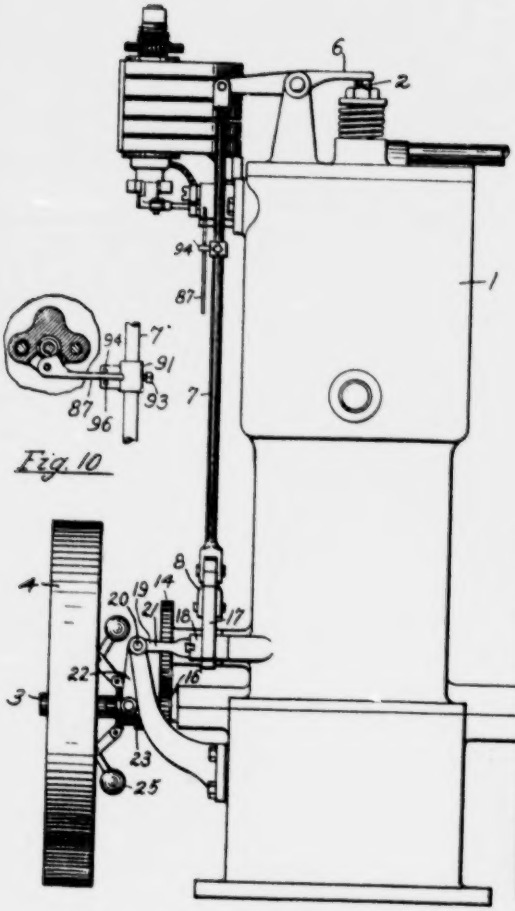


Fig. 10

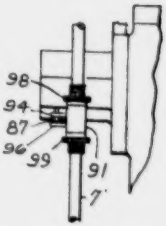


Fig. 11

Fig. 9

Witnesses:
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George H. MacLaughlin

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Horatio E. Bellows

1025

1041

UNITED STATES PATENT OFFICE.

LUTHER H. WATTLES, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF TO MATIE C. MESSLER, OF PAWTUCKET, RHODE ISLAND.

SPARKING IGNITER.

990,935. Specification of Letters Patent. Patented May 2, 1911.

Application filed June 1, 1910. Serial No. 564,472.

To all whom it may concern.

Be it known that I, LUTHER H. WATTLES, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Sparking Igniters, of which the following is a specification.

My invention relates to sparking ignition devices for internal combustion engines. In my prior Patent No. 909,264 issued Jan. 12, 1909, is shown a device of this character wherein a sparking current is generated by the unignited compressed engine charge.

The essential objects of the present invention are to regulate the instant of sparking; to secure a maximum efficiency of the engine charge; to prevent, when starting the engine, injury to the operator due to the initial expansion of the compressed charge while manipulating the fly wheel; to afford a positive and direct electrical communication between the electrodes and the magneto armature; to cushion the outward stroke of the piston; to make it possible to dispense with elaborate mechanism for returning the piston to original position, and to dispense with the generator piston valve; to simplify and cheapen the structure; and to render the same available upon engines of various types without reorganization.

Other objects will be hereinafter pointed out.

To the above ends primarily my invention consists in the construction, combination, and mode of operation of parts set forth in and falling within the scope of the claims hereto appended.

In the accompanying drawings which form a part of this specification and in which like reference characters indicate like parts throughout the views, Figures 1, 2, and 3, are front, side and bottom plan views respectively of my novel apparatus mounted in the side of an engine cylinder, showing in Fig. 1 also a usual engine valve operating mechanism, Fig. 4, a bottom plan view of the plug, Figs. 5, 6, and 7, sections on line *w*, *w*, *x*, *x*, and *y*, *y*, of Fig. 2, Fig. 8, a section on line *z*, *z*, of Fig. 6, Fig. 9, a side elevation of an upright four cycle internal combustion engine equipped with my device, and Figs. 10 and 11, detail views of modified means for actuating the piston locking member.

In the illustrated construction the engine comprises a cylinder or casting 1, exhaust valve, 2, crank shaft 3, fly wheel 4, and the usual valve operating mechanism, consisting of the valve lever 6, valve connecting rod 7, cam lever 8, stud 10, cam roll 11, cam lever spring 12, cam 13 integral with driven gear 14 loose on stud 15, driving gear 16, bell crank lever 17 upon its stud 18, connecting bell crank lever 19 pivoted on stud 20 and whose forked arm 21 engages lever 17 and whose other arm 22 is connected with the sliding sleeve 23, controlled by the fly ball governor 25. It is in conjunction with the above described familiar parts that my novel device is in this instance set forth.

My device comprises a plug 27 extending into an opening 28 in the casting 1 to which it is engaged in any convenient manner with its end face exposed in the compression area of the combustion chamber 29. In the present instance the plug is provided with an external flange 30 with perforations 31 for screws 32 entering threaded openings 33 in the casting and secured by nuts 34. The plug 27 preferably extends beyond the face of the casting and is longitudinally bored to form a chamber 36. Fixed within the plug and insulated therefrom is an electrode 37, and axially movable in the plug is the grounded electrode 38 having its outer end extending beyond the face of the plug and provided with a contact arm 39 within the combustion chamber. Integral with or fixed to the outer end of the electrode 38 is a collar 40 provided with a peripheral lug 41. A spring 42 surrounding the electrode has its ends fixed in the collar and in the plug respectively. Mounted in the chamber 36 is a piston 45 provided with a beveled outer end as at 46. A connecting rod 47 connects the piston through a crank pin 48 with a crank arm 49 fixed to an armature shaft 50 of an electric generator supported by a bracket arm 51 fixed to the plug.

The generator or magneto may be of any usual construction and in this instance comprises horse shoe magnets 53 surrounding a core 54 whose armature 50 has an upper vertical bearing 57 provided with a flange or base 58 fixed to the top of the magnets. The lower end of the armature shaft is journaled in a bearing 60 provided with a flange 61 fixed to the bottom of the magnets, and provided with an opening 63 in its side wall.

Fixed to or integral with the upper end of the shaft 50 is a collar 65. The exterior of the bearing 57 has threads 66. An annular disk 67 has threads 68 engaging threads 66 and is provided with a threaded perforation 69 to receive a thumb screw 70 whose end engages the flange 58. Surrounding the bearing 57 is a spring 71 whose upper end 72 is fixed to the collar 65, and whose lower end 73 is fixed to the disk 67. One terminal 75 of the winding is grounded in the core while the other terminal 76 is formed in a loose spiral around the shaft 50 and passes through the opening 63 to the binding post 77 upon the outer end of the electrode 37, thus completing the circuit through the sparking finger 39 and thence back through the magneto to the armature.

In order to limit excessive travel of the crank arm 49 a block 78 fixed to the side of the bearing 60 extends into the path of lugs 79 and 79' upon the arm. The outward stroke of the piston is in this instance cushioned by a curved spring 80 fixed to the block 78 and whose free end is in the path of the arm 49. The spring 80 may be omitted when the spring 71 is sufficiently stiff. A member for actuating the electrode 38, as shown in Fig. 5, consists of a lever of the first principle 82 pivoted by a pin 83 to the outer face of the plug 27 and comprises an arm 84 in the path of the beveled portion of the piston 45, and an arm 85 in contact with the lug 41 upon the collar of the electrode 38.

A piston locking member, best shown in Fig. 8, comprises a cam shaped or offset flat head 86 and a shank or handle 87. This member is eccentrically mounted upon a pivot 88 in the plug and moves in a slot 89 opening into the chamber 36 and transversely thereof. When the shank 87 is in normal or vertical position the head 86 is out of the path of the piston 45, but when the shank is elevated the head intersects the path of the piston and prevents the outward stroke of the latter. This arm may be elevated manually at will to the position shown in broken lines in Fig. 1, where it is frictionally held, until released and permitted to fall into vertical position. The release is effected either manually or by any convenient device attached to the engine driven mechanism. Such a device consists of a vertically adjustable sleeve 91 clamped by an adjusting screw 93 to the reciprocating connecting rod 7, and provided with a laterally projecting pin 94 in the path of the shank 87.

The operation of my device is as follows. The unignited compressed engine charge in the combustion chamber 29 impels the armature piston 45 outwardly with great force partially rotating the armature shaft 50 at a high rate of speed thus generating a current in the electric circuit. This circuit is broken to create a spark in the combustion chamber by the contact of the piston 45, in its outward travel, with the lever arm 82 which through arm 85 partially rotates the electrode 38 thereby swinging the arm 39 out of contact with electrode 37. The electrode is returned by the spring 42, and the piston, by the spring 71. It will be noted that in the present instance the terminal 76 runs directly from the winding to the electrode without the intervention of a brush or any moving contact whereby a more positive electrical effect is secured.

In order to utilize the maximum power of the charge provision is made for regulating the instant of sparking relatively to the position of the engine crank, so that when the engine is running at high speed the sparking will occur earlier; and when at a low speed, later. These results are respectively secured by manually turning the disk 67 upwardly or downwardly to increase or decrease the tension of the spring 71. This adjustment can be made while the engine is in operation. The screw 70 binds the disk in adjusted position.

To avoid accident in starting the engine the magneto is held out of operative position by manually elevating the handle 87, thereby checking the advance of the piston 45 during the initial compression revolution of the fly wheel, after which the handle 87 is returned to normal vertical position either manually or automatically thereby releasing the armature piston.

In some engines it is desirable to elevate the shank 87 automatically rather than manually. In "variable quantity" engines alternate strokes of the engine piston produce varying degrees of compression. In such case regularity of movement of the armature piston 45 is insured by the continuous vibration of the shank 87. I prefer for this purpose a device like that shown in Fig. 10 comprising interspaced pins 94 and 96 which loosely engage therebetween the shank 87 which is vibrated by the rod 7. The sleeve 91 is adjustable upon the valve operating rod 7 by the screw 93, but in some instances a preferable adjusting means is that shown in Fig. 11, where this means consists of thumb nuts 98 and 99 threaded to the rod 7 above and below the sleeve 91 whereby the sleeve may be adjusted while the engine is operating.

What I claim is,—

1. In an electric sparking ignition mechanism, the combination with an engine cylinder and an ignition circuit, of an electric generator comprising an armature shaft in the circuit, and a bearing in which the armature is mounted, means actuated by the charge in the cylinder for imparting a generating throw to the armature shaft, and a spring mounted upon the bearing and en-

gaging the armature shaft for returning the armature shaft to original position.

2. In an electric sparking ignition mechanism, the combination with an engine cylinder and an ignition circuit, of an electric generator comprising an armature shaft in the circuit, and a bearing in which the armature is mounted, means actuated by the charge in the cylinder for imparting a generating throw to the armature shaft, a spring mounted on the bearing and engaging the shaft, and means for varying the tension of the spring.

3. In an electric sparking ignition mechanism, the combination with an engine cylinder and an ignition circuit, of an electric generator comprising an armature shaft in the circuit, and a bearing in which the armature is mounted, means actuated by the charge in the cylinder for imparting a generating throw to the armature shaft, a rotatably adjustable member mounted upon the bearing, and a spring upon the bearing engaging both the shaft and the adjustable member.

4. In an electric sparking ignition mechanism, the combination with an engine cylinder and an ignition circuit, of an electric generator comprising an armature shaft in the circuit, and a bearing in which the armature is mounted, means actuated by the charge in the cylinder for imparting a generating throw to the armature shaft, a rotatably adjustable member mounted upon the bearing, a spring upon the bearing engaging both the shaft and the adjustable member, and means upon the adjustable member for maintaining said member in adjustable position.

5. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, driving connections between the piston and armature shaft, and means upon the generator and engaging the armature shaft for returning the piston to original position after each stroke.

6. In an electric sparking ignition mechanism, the combination with an engine cylinder, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the piston chamber, a fixed electrode in the plug, an axially movable electrode mounted in the plug, an arm on the second electrode normally in contact with the first electrode, a projection upon the second electrode, a lever provided with two arms pivotally mounted upon the plug, one of the lever arms extending normally in the path of the piston, and the other lever arm engaging the projection upon the electrode.

7. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft and bearing, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, a crank upon the armature shaft, a rod connecting the piston and crank, a lug upon the crank, and a block upon the bearing in the path of the lug.

8. In an electric sparking ignition mechanism, the combination with an engine cylinder, and a generator having an armature shaft and bearing, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, a piston in the chamber, a crank upon the armature shaft, a rod connecting the piston and crank, and a spring fixed to the bearing and extending into the path of the crank.

9. In an electric sparking ignition mechanism, the combination with an engine cylinder, of a spark plug in the cylinder provided with a piston chamber opening into the cylinder, an axially movable electrode mounted in the plug, a piston in the piston chamber, means for driving the piston, means actuated by the piston for rotating the electrode, and means in the plug for locking the piston against movement.

10. In an electric sparking ignition mechanism, the combination with an engine cylinder, an ignition circuit, and an electric generator having an armature shaft, of a piston operatively connected with the generator armature shaft and actuated by the charge in the cylinder, and means for locking the piston against movement.

11. In an electric sparking ignition mechanism, the combination with the engine cylinder, the generator, the armature shaft, and the ignition circuit, of a spark plug mounted in the cylinder and provided with a piston chamber communicating with the cylinder, a piston in the chamber, driving connections between the piston and the armature shaft, a swinging locking member mounted in the plug and movable into the path of the piston and means for actuating the locking member.

12. In an electric sparking ignition mechanism, the combination with the engine cylinder, of a spark plug mounted in the cylinder and provided with a piston chamber communicating with the cylinder, and provided with a transverse slot opening into the piston chamber, a piston in the piston chamber adapted to be actuated by a compressed charge in the cylinder, and a piston locking member pivotally mounted in the plug comprising a broad head located in the slot, and a shank upon the head extending outside the plug.

13. In an electric sparking ignition mechanism, the combination with the engine cylinder, the valve connecting rod, the genera-

tor, and the ignition circuit, or a spark plug mounted in the cylinder and provided with a piston chamber communicating with the cylinder, a piston in the chamber operatively connected with the generator, a piston locking member pivotally connected intermediate its length with the plug comprising a head movable into the path of the piston and a shank extending from the plug, and a projection carried by the valve connecting rod in the path of the shank.

14. In an electric sparking ignition mechanism, the combination with the engine cylinder, the valve connecting rod, the generator, and the ignition circuit, of a spark plug mounted in the cylinder and provided with a piston chamber communicating with the cylinder, a piston in the chamber operatively connected with the generator, a piston locking member pivotally connected intermediate its length with the plug comprising a head movable into the path of the piston, and a shank extending from the plug, a sleeve upon the valve connecting rod, means upon the rod adapted to engage the shank of the locking member, and means for adjusting the sleeve.

In testimony whereof I have affixed my signature in presence of two witnesses.

LUTHER H. WATTLES.

Witnesses:
HORATIO E. BELLOWS,
WALTER LOUIS FROST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

1029

1045

J. L. MILTON.

MAGNETO GENERATOR.

APPLICATION FILED OCT. 26, 1910.

1,096,048.

Patented May 12, 1914.

2 SHEETS—SHEET 1.

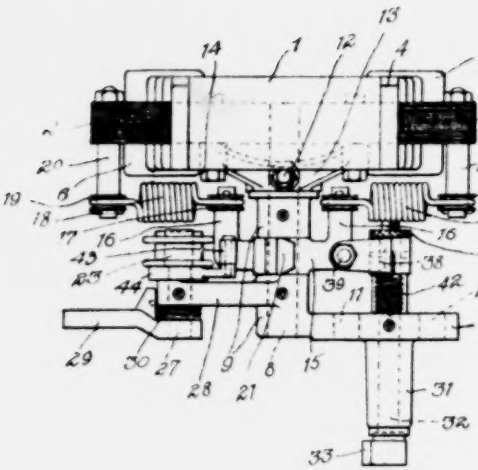
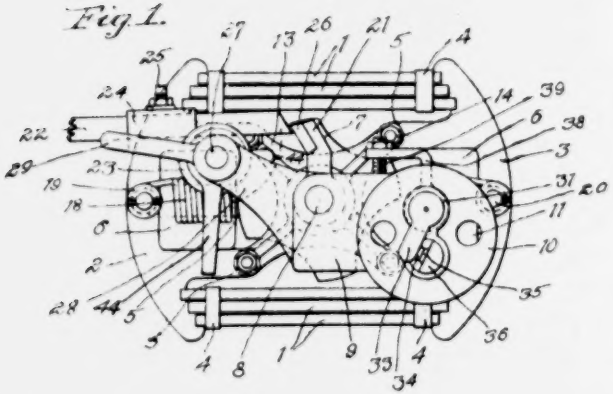


Fig. 2.

Fig. 1.



Witnesses

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1046

J. L. MILTON.

MAGNETO GENERATOR.

APPLICATION FILED OCT. 30, 1913.

1,096,048.

Patented May 12, 1914.

2 SHEETS—SHEET 2.

Fig. 4.

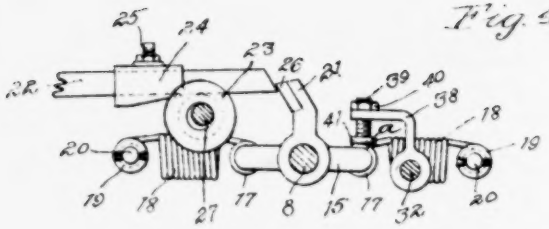
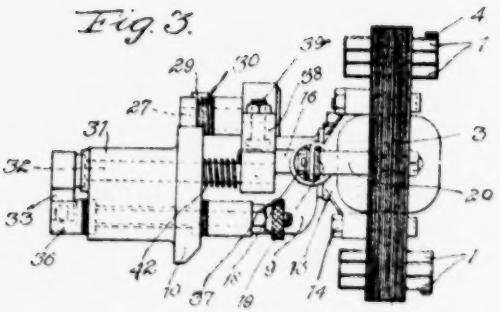


Fig. 3.



Witnesses

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1047

UNITED STATES PATENT OFFICE.

JOHN LEWIS MILTON, OF TIFFIN, OHIO.

MAGNETO-GENERATOR.

1,096,048. Specification of Letters Patent. Patented May 12, 1914.

Application filed October 28, 1910. Serial No. 589,884.

To all whom it may concern:

Be it known that I, JOHN L. MILTON, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented a certain new and useful Improvement in Magneto-Generators, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to magneto generators and ignition mechanism for use in connection with internal combustion engines.

The object of my present invention is to obtain a cheap and efficient construction while at the same time a construction which will prevent undue hammering of the ignition contacts.

One of the principal features of my invention resides in a malleable iron casting and the parts with which it coöperates in causing the oscillation of the generator inductor and in controlling the movements of the spark contacts. The use of this single malleable iron casting provides a rigid construction and at the same time one which transmits the necessary motion from the engine mechanism to the inductor of the generator, and which also by means of a cam surface carried on one of its arms actuates the contact mechanism to cause a sudden separation of the contacts followed, however, by a slow and easy reëngagement thereof. Since in the construction of my invention these spark contacts are brought slowly and easily together, excessive wear is avoided by the prevention of hammering which would otherwise take place.

My present invention may in a general way be regarded as an improvement upon my co-pending application, Serial No. 475,171, filed January 30, 1909. In that earlier application I disclosed an inductor generator having stationary windings and an oscillating inductor, this inductor being actuated in one direction by power supplied from the engine with which it was associated, there being provided a set of springs for returning the inductor sharply to its normal position and beyond, when the inductor was released.

My present invention also utilizes a set of springs for returning the inductor in a reverse direction whenever it is released by the mechanism which actuates the inductor to carry it into its abnormal position.

My present invention consists also in an arrangement whereby unnecessary hammering of the contacts is avoided, where the reciprocations of the operating rod are more frequent than the ignition periods, this arrangement consisting of mechanism for throwing the inductor out of action except during such time as the spark is required to pass for ignition purposes.

These and the various other features of my invention will be more clearly understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of the generator and its associated parts; Fig. 2 is a plan view thereof; Fig. 3 is an end elevation; Fig. 4 is an isolated elevation of the actuating mechanism.

Like reference characters are applied to the same parts throughout the various figures.

The generator proper comprises the permanent magnets 1, 1, whose consequent poles are secured to the ends of the pole-pieces 2 and 3. The bands 4, 4 clamp the magnets together and hold them in position upon the laminated pole-pieces.

Each of the pole-pieces is provided with three polar projections 5, 5, the middle projection in each instance carrying a winding 6. Rotatably mounted within the embrace of the polar projections is the inductor 7 carried upon the shaft 8. This inductor has generally the shape of a Maltese cross with diametrically opposite arms adapted when in one position to convey the magnetic flux of the permanent magnets through the polar projections on which the windings 6 are laid and when in the alternate position to short-circuit the magnetic flux around these central poles.

The shaft 8, which carries the oscillating inductor is journaled in the bracket 9 which extends from the plate 10, this plate being provided with openings 11, 11, through which bolts pass to secure the plate directly to the cylinder or other combustion chamber of an internal combustion engine. The arms of a brass spider 13 are attached to the polar projections of the field magnet by the bolts 14, 14, the hub of the spider in turn being mounted upon a boss extending from the

bracket member 9, the spider and thus the field-magnet being held in fixed position by means of the set screw 12.

An actuating yoke 15 of malleable iron is mounted upon the shaft 8 between the two journals of the bracket member 9, the yoke and the shaft being keyed together preferably by means of a taper pin. The yoke is provided with two arms 16, 16 which extend from diametrically opposite sides of the hub, where they turn and become parallel with the shaft 8 at diametrically opposite positions. At the end of each arm is a grooved roller 17. The free ends of the helical actuating springs 18, 18 are hooked over these rollers, the other ends of the springs being hooked over similarly grooved rollers 19, 19 carried by posts 20, 20 extending from the field pole-pieces 2 and 3. These posts are mounted at diametrically opposite points, wherefore the actuating springs tend always to return the yoke 15 and thus the inductor to their normal position.

A steel faced operating arm 21 extends upwardly from the hub of the yoke 15 where it is adapted for engagement by the end of the reciprocating rod 22 connected and driven in any suitable manner from the shaft of the engine with which the ignition mechanism is associated. A roller 23 carries the free end of the actuating rod 22 except when the lower cam surface of the adjustable sleeve 24 rides up on the roller to disengage the end of the actuating rod from the face of the operating arm 21. The exact time in the cycle of the engine at which this release of the yoke and hence of the inductor takes place may be regulated by adjusting the position of the sleeve 24, the set screw and nut 25 serving to maintain the proper adjustment. The hardened steel face 26 of the operating arm 21 will prevent undue wear at this point.

The roller 23 is eccentrically mounted upon a post 27 which is carried by an arm 28 extending from the bracket 9. A starting lever 29 is keyed to the end of the post 27 whereby the post may be turned in one direction or the other to raise or lower the roller 23 due to its eccentric mounting upon the end of the post. A small spring 30 connected with the starting lever 29 and with the extension 28 tends to hold the starting lever always in the running position. When it is desired to retard the production of the spark at the contact points as in starting the engine, the lever 29 is thrown manually into a position in which the roller 23 is lowered, thereby delaying slightly the disengagement of the end of the actuating rod from the corner of the operating arm 21 and thus delaying also the spark production.

Coming now to the mechanism for controlling the operation of the contacts, a boss 31 will be seen to extend from the bolting plate 10. Through this extends a spindle 32. At the end of the spindle is a swinging contact arm or crank 33 upon which is mounted the platinum or other contact point 34 adapted for operation with the contact point 35, mounted upon the post 36 suitably insulated from the plate 10 and the other parts of the mechanism. The post 36 terminates in a binding screw 37 to which the conductor leading from one end of the field magnet windings is electrically connected. At the other end the contact spindle 32 is provided with an L-shaped arm 38 through which passes the adjusting screw 39 of the anvil 41, the lock nut 40 serving to maintain the adjustment. A very light helical spring 42 surrounds the spindle 32 between the plate 10 and the arm 38 and, being connected at one end with the plate 10 and at the other end with this actuating crank 38, it tends to turn the spindle 32 in a direction which will bring the contact points 34 and 35 into engagement with one another. The drawings show these several parts in their normal positions.

The position of the anvil 41 is such that the upper surface of an arm 16 of the yoke 15 will engage it to cause a separation of the contact points 34 and 35. It will be noted that the arm 16 forms a curved cam surface *a* adapted to engage the lower side of the anvil 41 whereby the overrunning of the inductor and yoke piece 15 upon their release from the actuating rod 22 will cause this cam surface to engage the anvil with a sharp sudden hammer-like blow, thus causing a correspondingly sudden opening of the contact points 34 and 35. The actuating springs 18 promptly return the yoke member 15 to its normal position after the overthrow which follows the release of its operating arm 21 from the pressure of the actuating rod 22. During this return movement the anvil 41 rides smoothly and easily over the curved cam surface of the engaging arm 16 of the yoke 15. The light spring 42 causes the actuating crank 38 to follow the yoke-arm 16 in this return movement, thereby causing the contact points 34 and 35 to be returned slowly and easily to their normal contact positions. The surface of the arm which acts as a cam in conjunction with the anvil 41 is curved as shown in the drawing to avoid the pounding of the contact mechanism. The distance between the anvil 41 and the coöperating cam surface *c* of the yoke arm may be adjusted to cause the contact points 34 and 35 to separate just at the proper point in the current wave production.

An auxiliary roller 43 is mounted upon a bell crank lever 44, this bell crank lever being pivotally mounted on the post 27. The depending arm 44 is adapted to be controlled by the engine governor. Thus when

the speed of the engine exceeds the limit for which the governor is set, the roller 43 is elevated to lift the actuating rod 22 clear of the operating arm 21, thus preventing the oscillation of the inductor and at the same time the actuation of the contacts 34 and 35.

While I have shown and described a preferred embodiment of my invention, it will be apparent to those skilled in the art that many modifications may be made without departing from the spirit thereof.

What I claim as new and desire to secure by Letters Patent is:

1. In combination, a field magnet, an inductor mounted upon a shaft for oscillation relative to the field magnet, a yoke mounted upon the shaft for oscillation with the inductor, an operating arm carried by the yoke, a reciprocating member driven by an internal combustion engine to engage the operating arm to swing the yoke in one direction, means for disengaging the reciprocating member from the operating arm to permit the oscillating parts to return to their normal position, spring mechanism connected with the diametrically opposite arms of the yoke, to return it to the normal position when relieved of the pressure of the reciprocating member, a curved cam surface on one arm of the yoke, a fixed electrical contact and a swinging electrical contact in the combustion chamber of the internal combustion engine, a spindle upon which the swinging contact is mounted, a push finger mounted upon the contact and spindle and carrying an anvil normally disengaged from the cam surface of the yoke but adapted to be engaged by the cam surface upon the overthrow of the oscillating yoke to separate the electrical contacts, and a light spring acting to bring the swinging contact and the push finger into their normal positions.

2. In a device of the class described, a suitable field magnet, an inductor adapted for oscillating with respect to the field magnet, a yoke rigidly connected with the inductor and having projections at diametrically opposite points, main actuating springs connecting the projections of the yoke with suitable stationary projections on the frame, the said actuating springs tending always to return the oscillating members to their normal positions, a pair of electrical contacts in the combustion chamber of an internal combustion engine, a light spring tending to maintain the closure of said electrical contacts, a push finger adapted when struck to separate the electrical contacts against the tension of the light spring, a curved cam surface on the yoke adapted to engage the push finger upon the overthrow of the yoke when returned to its normal position by the main actuating springs, an operating arm associated with the yoke, and reciprocating mechanism driven by the internal combustion engine to engage the operating arm to swing the yoke and the inductor out of their normal position.

3. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation within the field magnet, a pair of main actuating springs, each connected at one end with the field magnet frame, an integral yoke member rigidly connected with the inductor, the main actuating springs being connected at their free ends with the said yoke member, an operating arm constituting a part of the integral yoke member and adapted to be engaged by a reciprocating member driven by an internal combustion engine, separable contact points within the combustion chamber of the internal combustion engine, a light spring tending to maintain the closure of the electrical contacts, and mechanism adapted to be engaged by a cam surface on the yoke member to cause the separation of said contacts in opposition to the tension of the said light spring.

4. In a device of the class described, the combination of a field magnet, an inductor mounted for oscillation therein, spring mechanism tending to return the inductor to its normal position when moved out of said normal position, an operating arm for turning the inductor out of its normal position, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod being adapted normally to engage the end of the inductor-operating arm, means for shifting the path of travel of the reciprocating rod to determine its engagement with the operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and a member fixed relative to the inductor adapted to effect the operation of said contacts to create an ignition spark within the combustion chamber of the engine.

5. In a device of the class described, a field magnet, an inductor mounted for oscillation therein, an operating arm for said inductor, a reciprocating actuating rod driven from the shaft of an internal combustion engine, the end of the reciprocating rod adapted normally to engage the end of the inductor-operating arm, generating windings supported by the field magnet, separable electrical contacts in the combustion chamber of the engine, and an impact member fixed relatively to the inductor adapted to separate said contacts to create a spark in the combustion chamber.

6. In a device of the class described, a field magnet, a shaft, an inductor mounted upon the shaft for oscillation relative to the

field magnet, a yoke mounted upon said shaft for oscillation with said inductor, springs tending to retain the inductor and shaft in normal position, an engine-driven member for oscillating said shaft and parts carried thereby, separable electrical contacts within the combustion cylinder of the engine, and an impact member fixed relative to the inductor and shaft arranged to effect the separation of said contacts to create an ignition spark in the combustion chamber of the engine.

In witness whereof, I hereunto subscribe my name this 26th day of October, A. D. 1910.

JOHN LEWIS MILTON.

Witnesses:
ALEXANDER KISKADDEN,
EUGENIA K. ADAMS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

1035

1051

E. PODLESAK.

MAGNETO MACHINE.

APPLICATION FILED JULY 21, 1911.

1,098,052.

Patented May 26, 1914.

4 SHEETS—SHEET 1.

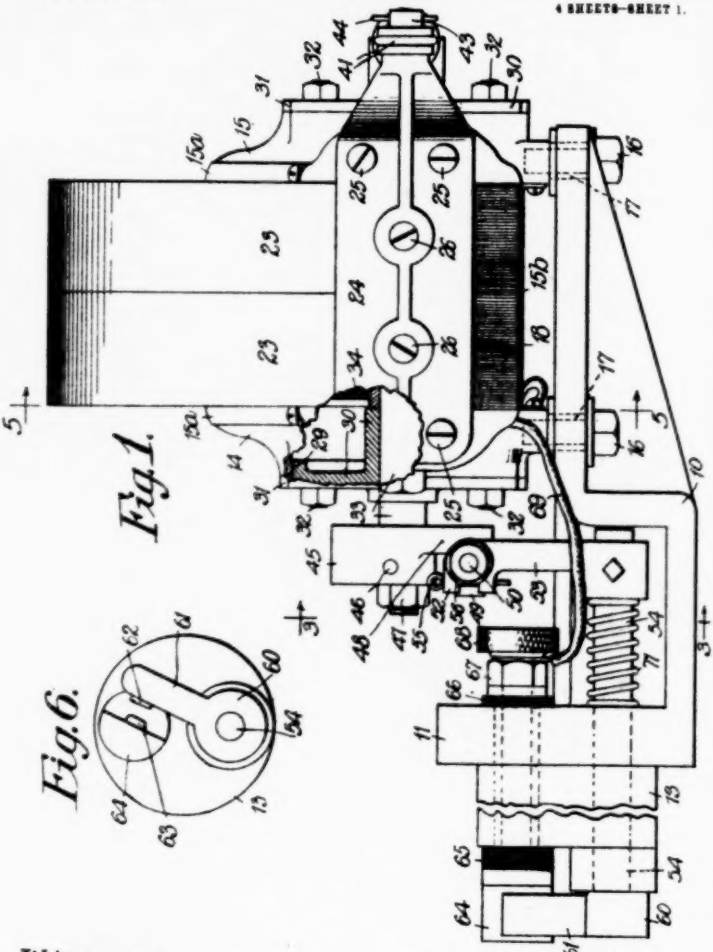


Fig. 1.

Fig. 6.

Witnesses

Albin C. Ahlberg

L. W. Novander

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1036

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MAGNETO MACHINE.

APPLICATION FILED JULY 21, 1911.

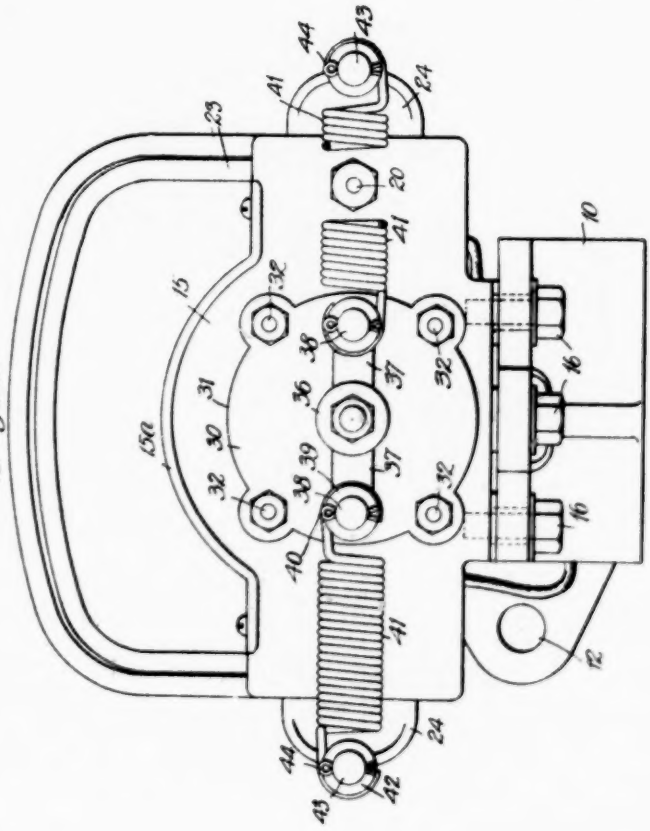
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1,098,052.

Patented May 26, 1914.

4 SHEETS—SHEET 2.

Fig. 2.



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MAGNETO MACHINE.

APPLICATION FILED JULY 21, 1911.

1,098,052.

Patented May 26, 1914.

4 SHEETS—SHEET 3.

Fig. 3.

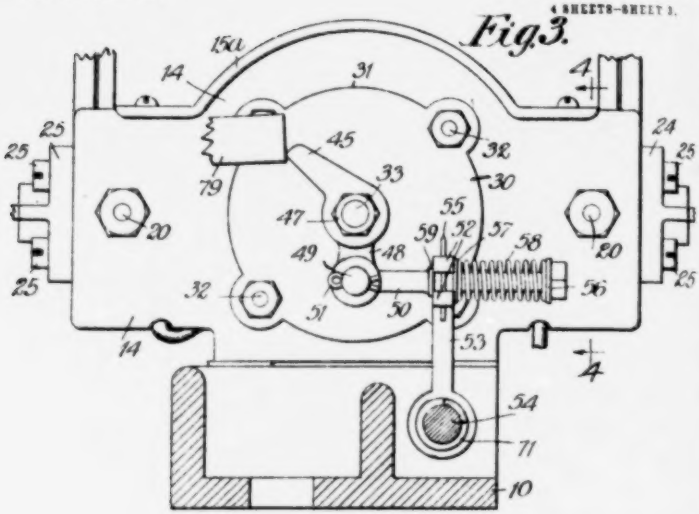
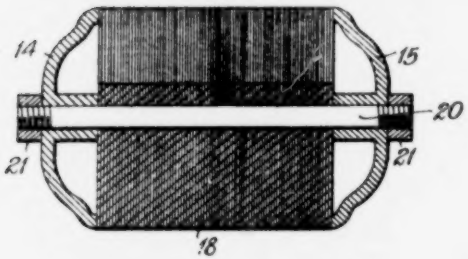


Fig. 4.



Witnesses:

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1038

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1054

MAGNETO MACHINE.

APPLICATION FILED JULY 21, 1911.

1,098,052.

Patented May 26, 1914.

4 SHEETS—SHEET 4.

Fig. 7.

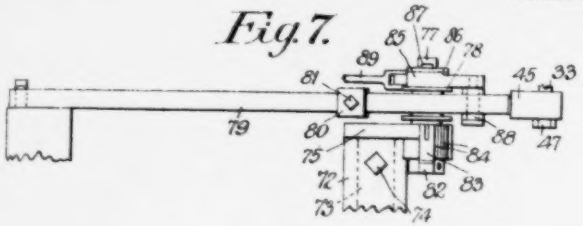


Fig. 5.

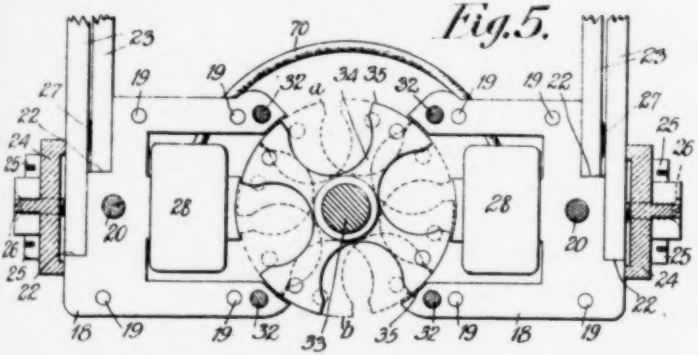


Fig. 9.

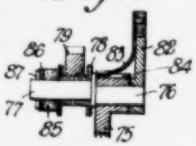
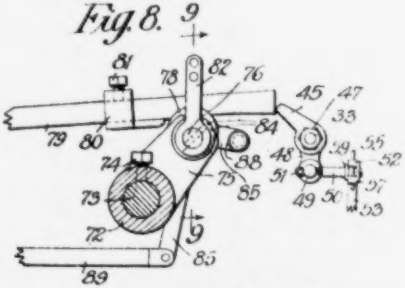


Fig. 8.



Witnesses:

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UNITED STATES PATENT OFFICE.

EMIL PODLEŠÁK, OF TIFFIN, OHIO.

MAGNETO-MACHINE.

1,098,032. Specification of Letters Patent. Patented May 26, 1914.

Application filed July 31, 1911. Serial No. 639,738.

To all whom it may concern:

Be it known that I, EMIL PODLEŠÁK, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Magneto-Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to magneto machines and it contemplates a generally improved device. Its object is to produce a magneto machine which will be substantially less expensive than devices of the prior art, which will be of more simple and reliable construction and which will be more durable and more efficient.

To the ends above noted I have invented various features of construction and arrangement, new in themselves and influentially related, touching not only upon the magneto itself, but also upon the sparking mechanism, for association with an internal combustion engine, to which it is peculiarly adapted.

Specifically, therefore, my device is a magneto machine for ignition purposes and the various features of construction to which I have referred will be found to be consistent with this use. In addition to these various features of construction and arrangement, I provide for an entirely new manner of operation which could be carried out by mechanisms other than those herein specifically shown. It will be seen, however, that some of the more specific of the appended claims bring out the detailed construction involving this operation, which is particularly useful and advantageous in this respect.

The various features of my invention are embodied in the magneto machine illustrated in the accompanying drawings, in which—

Figure 1 is a side elevational view thereof; Fig. 2 is an end elevational view thereof; Fig. 3 is a partial view taken on the plane of the line 3—3 of Fig. 1 and looking in the direction indicated by the arrows; Fig. 4 is an isolated sectional view taken on the plane of the line 4—4 of Fig. 3 and looking in the direction indicated by the arrows; Fig. 5 is a partial sectional view taken on the plane of the line 5—5 of Fig. 1 and looking in the direction indicated by the arrows; Fig. 6 is an isolated face view of the spark gap mechanism; Fig. 7 is a plan view of the actuating mechanism; Fig. 8 is a fragmentary elevational view of some of the parts shown in Fig. 7, some parts being shown in section; and Fig. 9 is a sectional view taken on the plane of the line 9—9 of Fig. 8 and looking in the direction indicated by the arrows.

This type of machine is adapted to be bolted directly upon the engine casting. The various parts are carried upon a comparatively heavy supporting frame or shelf 10 which is provided with the upright flange 11 having openings 12 through which cap bolts may be passed into the engine casting. A cylindrical boss 13 extends forwardly from this upright flange and is adapted to fit in a corresponding opening in the engine casting so that the spark gap terminals which are carried thereby and which will be described later may be disposed directly in the engine cylinder.

Two non-magnetic supporting side plates 14, 15, upon which various other parts of the magneto are carried, are bolted to the frame or shelf 10 by means of cap bolts 16, 16 passing through enlarged openings 17, 17 in the frame and into the bottom of the side plates as illustrated in Figs. 1 and 2. The utility of these enlarged openings will appear presently. There are preferably three of these cap bolts and the three supporting points thus determine the supporting plane and a rigid arrangement is secured. Between these supporting side plates, at each end thereof, a laminated pole piece 18 is clamped, these pole pieces comprising laminations riveted together at 19, 19. As shown in Figs. 4 and 5, bolts 20, 20 pass through the pole pieces and through the side plates and at the ends are provided with nuts 21, 21 so as to secure a mechanically resistant arrangement.

The outer end of each pole piece 18 is stepped as indicated at 22, 22 for the reception of permanent horse shoe magnets 23, 23 which thus pass from one pole piece over to the other as shown in Figs. 1 and 2. These horse shoe magnets are held firmly upon the pole pieces by means of the end plates 24, 24 which are secured to the ends of the side plates 14 and 14 by means of bolts 25, 25. As to the magnets, there are two sets of two, the inner magnets resting upon the

upper step 22 and the outer magnets resting upon the lower step 22. Set screws 26, 26, one for each side of each pair of magnets, have threaded engagement with the end plates 24, 24 and are screwed in to abut against the magnets to clamp them firmly in place. Dished springs 27, 27 are interposed between the magnets of each pair, near each end, as illustrated in Fig. 5, in order to transmit the clamping action.

The members 18, 18 are tri-polar and the middle polar extension of each of them is provided with a generating coil 28, 28. Each of the side plates 14 and 15 has a central opening 29, these openings alining upon an axis disposed midway between the pole faces, as will be pointed out presently. In each of the openings 29 a non-magnetic collar 30 is secured, the flange 31 of this clamp being secured to the face of the side plate by means of bolts 32, 32. These bolts, as shown in Fig. 5, extend through the outside polar extensions of the pole pieces in order to assist in clamping the laminations together. The collars 30, 30 form bearings for the rotor shaft 33 upon which the rotor 34, having four faces 35, 35, is secured. The overall periphery of the rotor is cylindrical and this form corresponds with the cylindrical internal faces of the polar projections, all as illustrated in Fig. 5. The faces of the rotor are approximately the same width as the faces of the middle polar projections and are considerably greater in width than the outside polar faces. Furthermore, the rotor faces are broad enough to span the distance between the middle polar faces and the outside polar faces, but not wide enough to span the distance between the outside polar faces on one side and those on the other. A thin brass plate 15ª is secured across the top of the side plates and a thin brass plate 15ᵇ is secured across the bottom of the side plates in order to inclose and protect the rotor.

On the outside, beyond the side plate 15, the rotor shaft 33 has rigidly secured thereto a hub 36 which is provided with the oppositely extending arms 37, 37. Each of these arms is provided at its end with a portion 38 turned outwardly at right angles and provided with a spool 39 slipped thereon and retained in place by means of a cotter pin 40. One end of a coiled spring 41 is wound about each spool 39 and the other end of each spring is wound about a spool 42 mounted upon a stud 43 extending from the corresponding end plate 24, a cotter pin 44 being provided to hold this latter spool in place. The tendency of the springs 42, 41 is to keep the arms 37, 37 in a horizontal position, as shown in Fig. 2, and when they are in this position the rotor is in the position shown in full lines in Fig. 5. Upon the opposite end of the rotor shaft 33, which is slightly reduced, a finger 45, preferably of tool steel, is secured by means of a cross pin 46 and a nut 47. This finger, as will be described later, is adapted to be engaged intermittently by a push rod operating from the engine shaft. This finger is provided with the downward extension 48 which is provided with a small stud 49 to which the end of a small connecting rod 50 is pivotally attached, the rod being held in place by means of a cotter pin 51. This rod extends to the right (Fig. 3) where it passes between the tangs of the bifurcated ends 52 of a swinging lever 53 rigidly secured upon a shaft 54, this shaft being journaled in the boss 13, as indicated in Fig. 1. A cotter pin 55 retains the connecting rod between the parts 52, 52. The connecting rod extends considerably to the right of the lever 53 and at its end is provided with a shoulder or nut 56 between which and the loose washer 57 thereon the coiled spring 58, encircling it, is disposed. It is clear that the expansive nature of this spring will normally tend to hold the washer 57 against the right side of the operating lever 53. The function of this spring will be pointed out later. The connecting rod 50 is provided with a small shoulder 59 on the left of the oscillating lever and the function of this shoulder will be pointed out later when the operation is described.

The shaft 54 extends forwardly beyond the boss 13 and it is there provided with a hub 60 rigidly secured thereto and having an arm 61. This arm carries the contact piece 62 which coöperates with the stationary contact piece 63 carried upon a stud 64 which is effectively insulated from the boss 13 and the flange 11 by means of the insulating parts 65, 65. The stud 64 extends through the boss 13 and the flange 11 and it is there provided with a nut 67 and with a binding screw 68. It is clear that angular movement of the arm 61 will result in the making or breaking of a circuit between the points 62 and 63. The arm 61 is grounded to the machine and the other contact is insulated therefrom. A suitable insulated conductor 69 connects the binding post 68 and one of the coils 28 while the two coils are connected together by means of a conductor 70. The free terminal of the second coil 28 is grounded to the machine and this completes the circuit for low tension ignition.

The arm 61 is so disposed upon the shaft 54 that when the oscillating lever 53 is in its normal position, that is, when the rotor is in the position shown in full lines in Fig. 5, the contacts 62 and 63 are separated as indicated in Fig. 6. The purpose of this arrangement will be pointed out later when the operation is described. The shaft 54 is capable of a slight longitudinal movement, conveniently due to the play between the

mechanical connections involved, but it is held at one extreme of its movement by means of a coiled spring 71 which surrounds it between the hub of the lever 53 and the flange 11. When it is desired to clean the contacts 62 and 63 they may be brought into engagement and the shaft 54 moved back and forth to rub them together.

Referring to Figs. 7, 8 and 9, it will be seen that a supporting stud 72 is provided and this stud may extend from any suitable part of the engine frame. This stud is provided with a central bore in which a shaft 73 is held in any adjusted position by means of a set screw 74. This shaft 73 carries an arm 75 which, in turn, carries a rotatable stud 76. This stud has a forward extension 77, the axis of which is parallel to but eccentric from the axis of the stud itself, for a purpose which will be pointed out presently, and upon this extension a roller 78 is disposed. A push rod 79 rides upon the roller 78 and, as broadly indicated in Fig. 7, is mechanically connected in some way with the engine shaft. Thus the push rod 79 is guided to abut against the finger 45, as indicated in Fig. 8, and for each reciprocation thereof it moves the finger over to impart a certain amount of oscillation to the rotor. This action is called "cocking the magneto." The push rod is provided with a cam piece 80, secured in any adjusted position by means of the set screw 81 and this cam piece is arranged to engage the roller at the proper moment to raise the push rod and to release the finger 45 so that the rotor may fly back under the influence of the springs 41, 41. As the rotor returns in this manner the magnetic flux is changed so that current is generated in the windings 28, 28 and this causes a spark to pass between the contacts 62 and 63, as will be pointed out more fully later. It will appear that the time at which the finger 45 is released from the push rod 79 is very important and initial adjustment in this respect is secured by giving the arm 75 the proper position and by tightening down the set screw 74 after this position has been attained. It is, however, desirable frequently to change the timing, either to retard or advance the spark, during the operation of the engine, and in order that this may take place I provide an actuating lever 82 upon the stud 76. In turning the stud by means of this lever the roller 78 is raised or lowered because of the eccentric position of the shaft 77 relative to the stud 76, and in this way the time of the release of the finger 45 may be varied. The lever 82 is provided with a spring 83 which is adapted to snap down into any one of the notches 84, 84 on the end of the arm 75 so that the arrangement may be held properly in any adjusted position. In temporarily adjusting the lever 82 the tension of this spring is easily overcome so that it may snap into the next notch either one way or the other. Also upon the part 77 I mount a bell crank lever 85, held in place by means of a washer 86 and a cotter pin 87, and this bell crank lever is provided upon one arm with a roller 88 which is adapted to engage the under side of the push rod 79. The other arm of this bell crank lever is connected by means of a suitable link 89 with the governing mechanism of the engine and the arrangement is such that when the speed becomes excessive the bell crank lever will be moved in a counter-clockwise direction (Fig. 8) and the push rod 79 will be lifted to such an extent that it can not engage the finger 45 to cock the magneto. When the speed has decreased the bell crank lever turns in the opposite direction and the push rod may again drop down into operative relation with the magneto.

As before stated, the spark contacts 62 and 63 are normally separated from each other. This is important since if for any reason the magneto gives out it is desirable that a battery circuit be connected to provide the spark. If the contacts are normally closed there will be a very large strain upon the batteries and even if storage batteries were used it would result in the consummation of a larger current than is necessary to produce the spark. Another advantage is gained in this respect and that is the elimination or avoidance of most or all of the reverse current. If these contacts are open during the proper part of the cocking of the magneto, there will be no current flowing which will tend to perpetuate itself and to have a counter effect upon the current which is to produce the spark when the rotor is released. It will be seen that in the normal position the rotor barely overlaps the middle polar projections and it is a fact that the rotor faces have left the middle polar projections by a considerable distance before the contacts 62 and 63 come together. Since the middle projections are the only ones which carry windings any effect between the other projections would not be noticeable in this respect, and there is no appreciable counter effect, if any. In cocking the engine the rotor is brought over into approximately the dotted position *a* and upon the fly back it probably reaches the position shown by the dotted lines *b*. With an arrangement of this kind the spark is secured upon the rising flux, and this is desirable since, as has been pointed out, the relation between the rotor faces and the pole faces is such as to bear a peculiarly advantageous relation to the position and operation of the spark contact terminals.

It will be seen that when the rotor is cocked after a considerable movement, certainly after the rotor faces have left the middle polar faces, the contacts will come

together and the further movement of the finger will be taken up by the spring 58. Upon the release of the finger there will be a short snappy action and the flange 59 on the connecting rod 50 will engage the lever 53 and will strike it a sharp hammer blow, thus suddenly opening the contacts at the proper point in the current wave which is simultaneously generated in the magneto coils. If, however, it be desired to utilize the decreasing flux for the spark, the inductor is so cocked as to bring two opposite arms of the rotor approximately opposite the wound polar projections before releasing. In this arrangement it is quite essential that the contacts be kept separated until the flux through the wound polar projections has attained a substantially fixed intensity, that is, an intensity which is not varying. The operation of the spark contact terminals should be as above described.

The arrangement between the end plates, the side plates, the magnets and the pole pieces is important since a very rigid structure is secured. The parts are few and the connecting points are few. The rotor shaft finds bearing at both ends and in this way the proper relation to the poles is constantly maintained. The fact that the push finger can be made independently of the other parts is important since it can then be made of tool steel and can be readily replaced without interfering with any other of the mechanisms. This finger must withstand a considerable amount of wear and tear and such an arrangement as I propose is particularly advantageous.

It will be remembered that the side plates which support a number of parts are adjustably mounted upon the supporting frame or shelf, due to the enlarged openings through which the cap holes pass. The mechanical arrangement between the push finger and the sparking mechanism is such that great accuracy is not required and it is not necessary, therefore, to finish the engaging faces of the shelf and the side plates. Approximate mounting is ample and adjustment is easily secured by shifting the side plates about and then tightening the screws as desired.

The parts are easily dismantled. For instance, the cotter pin 55, if withdrawn, will release the entire magneto arrangement from the sparking arrangement and the other parts are equally easy of access for the purposes of inspection and repair.

No special arrangement is required for supporting the springs which operate the oscillating rotor. The springs are conveniently supported from the side plates which perform other useful functions and in this way the number of parts is kept at a minimum. These plates hold the U shaped magnets in proper position and in such position that the windings and polar projections do not come very close to the intermediate parts of the magnets. In other words, a better field is the result since leakages are almost entirely eliminated.

The means for timing the spark is advantageous. The operating means is held firmly in any position, regardless of where the spark comes in, even though temporary adjustment, during the running of the machine, is available.

I claim as new and desire to secure by Letters Patent:

1. In a magneto machine, pole pieces, horse-shoe magnets spanning said pole pieces, side plates between which said pole pieces are firmly clamped, end plates bolted to the ends of said side plates, a shaft mounted in said side plates, a rotor on said shaft, an arm on said rotor, and a spring extending from said arm to an extension on the adjacent end plate.

2. In a magneto machine, pole pieces, horse-shoe magnets spanning said pole pieces, side plates between which said pole pieces are firmly clamped, end plates bolted to the ends of said side plates, a shaft mounted in said side plates, a rotor on said shaft, oppositely extending arms on said shaft, extensions on said end plates, and a spring extending between each extension and the adjacent arm.

3. In a magneto machine, pole pieces, horse-shoe magnets spanning said pole pieces, side plates between which said pole pieces are firmly clamped, end plates bolted to the ends of said side plates, set screws passing through said end plates and abutting against said magnets to hold them firmly in engagement with said pole pieces, a shaft mounted in said side plates, a rotor on said shaft, an arm on said shaft, and a spring extending from said arm to an extension on the adjacent end plate.

4. In combination, a pair of tri-polar pole pieces, windings on the middle portions thereof, a four-faced rotor mounted to oscillate between said pole pieces, each of said rotor faces being of a width substantially the same as the width of the middle pole piece and being wide enough to span the distances between the middle pole pieces and the outside pole pieces but not great enough to span the distances between opposite pole pieces, contact mechanism mechanically connected with said rotor, the contacts of said mechanism being normally separated and the normal position of the rotor being such that the rotor faces only slightly overlap the middle pole pieces carrying the windings, and means for operating the rotor to cock it in a direction receding from the middle pole pieces and simultaneously closing said contacts together.

5. In combination, pole pieces, a rotor as-

sociated therewith, means for oscillating said rotor, a stationary contact member, an oscillating shaft carrying a contact member for cooperation with said stationary contact member, an operating lever for said oscillating shaft, resilient connections between one side of said operating lever and said rotor, and positive connection between the other side of said operating lever and said rotor.

6. In combination, a pair of pole pieces, a rotor mounted upon a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon its release, an arm upon the rotor shaft, an oscillating shaft, a lever on said oscillating shaft, a connecting rod extending from said arm through an opening in said lever, a head on said connecting rod, a spring disposed between said head and one side of said lever, a collar on the connecting rod adapted to engage the other side of said lever, a contact piece carried by said oscillating shaft, and a stationary contact piece associated therewith, said contacts being normally separated but being brought together by part of the cocking action transmitted through said spring and being suddenly separated by the engagement of said collar with said lever.

7. In combination, a pair of pole pieces, a rotor mounted upon a shaft, means for cocking said rotor, spring means for suddenly bringing said rotor back upon its release, an arm upon the rotor shaft, an oscillating shaft, a lever on said oscillating shaft, a connecting rod extending from said arm through the bifurcated end of said lever, a head on said connecting rod, a spring disposed between said head and one side of said lever, a collar on the connecting rod adapted to engage the other side of said lever, a contact piece carried by said oscillating shaft, and a stationary contact piece associated therewith, said contacts being normally separated but being brought together by part of the cocking action transmitted through said spring and being suddenly separated by the engagement of said collar with said lever.

In witness whereof, I hereunto subscribe my name this 18th day of July, 1911.

EMIL PODLEŠÁK.

Witnesses:

LEONARD W. NOVANDER,

LEONARD E. BOGUE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

E. J. KANE.

ELECTRIC IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED FEB. 2, 1910.

1,204,573.

Patented Nov. 14, 1916.

2 SHEETS—SHEET 1.

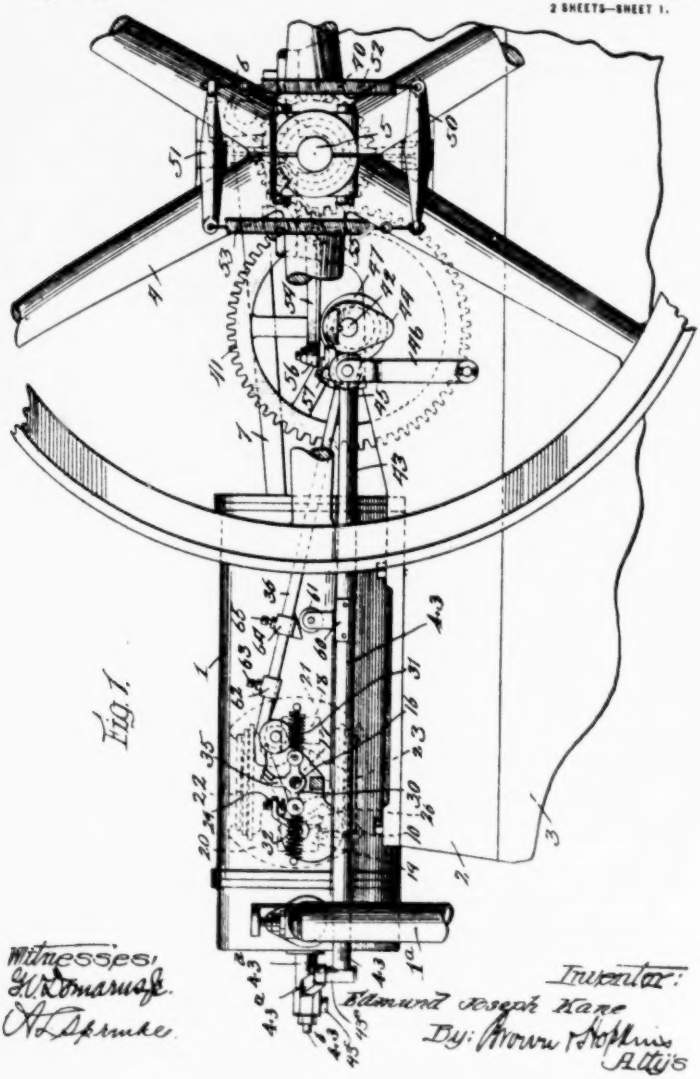


Fig. 1.

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Inventor:
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1061

E. J. KANE.

ELECTRIC IGNITER FOR EXPLOSIVE ENGINES.

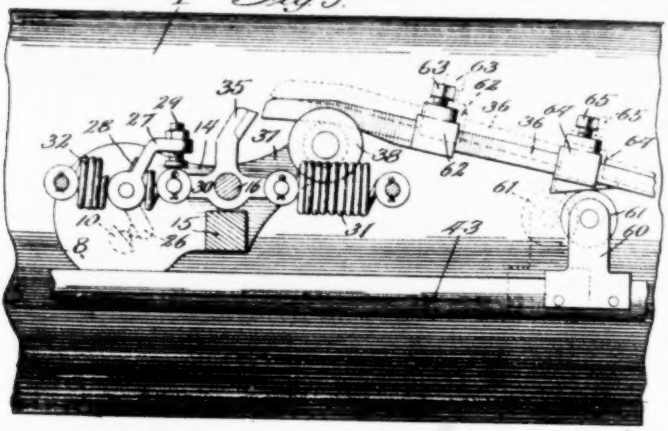
APPLICATION FILED FEB. 2, 1910.

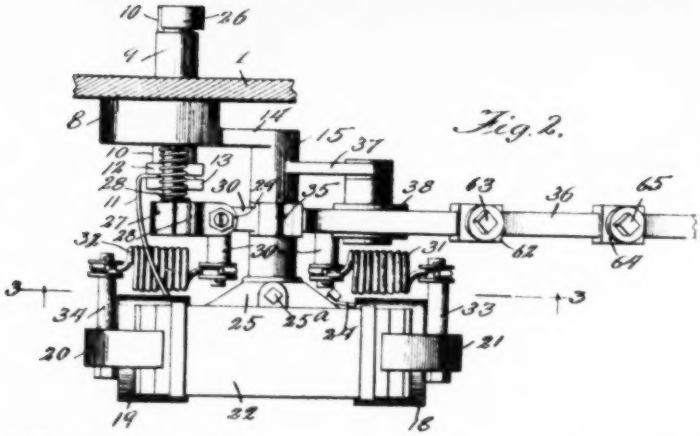
1,204,573.

Patented Nov. 14, 1916.

2 SHEETS—SHEET 2.

Fig 3.





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UNITED STATES PATENT OFFICE.

EDMUND JOSEPH KANE, OF CHICAGO, ILLINOIS, ASSIGNOR TO WEBSTER ELECTRIC COMPANY, OF RACINE, WISCONSIN, A CORPORATION OF WEST VIRGINIA.

ELECTRIC IGNITER FOR EXPLOSIVE-ENGINES.

1,204,573. Specification of Letters Patent. Patented Nov. 14, 1916.

Application filed February 2, 1910. Serial No. 541,428.

To all whom it may concern:

Be it known that I, EDMUND JOSEPH KANE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Igniters for Explosive-Engines, of which the following is a full, clear, and exact specification.

The invention relates to improvements in electric-igniters for explosive engines.

The object of the invention is to provide an electric igniter mechanism with novel and improved means for producing the spark for firing the charge.

A further object of the invention is to provide in a device of the character described improved means by which when the exhaust valve is held open during the operation of the engine by the speed governor mechanism and no charge in the cylinder is to be exploded, the igniter mechanism is rendered inoperative and consequently the generator consisting of the oscillating or rotating armature or inductor remains idle and a spark is not produced and as a consequence the resulting wear upon the moving parts and the loss of energy required to generate a useless spark is avoided.

A further object of the invention is to provide in a device of the character described, direct and positively operating means for imparting movement to the oscillating armature or inductor, which preferably comprises the movable part of the generator.

To the attainment of these ends and the accomplishment of certain other new and useful objects, as hereinafter described, shown in the accompanying drawings forming a part of the specification, and finally pointed out more specifically in the appended claims, the invention is directed.

In the said drawings, Figure 1 is a side elevation of an explosive engine with the invention attached and having parts of the igniter mechanism shown in section and other parts shown in broken lines in order to more fully disclose the details of construction of the igniter mechanism and one manner of attaching the invention to an explosive engine. Fig. 2 is a detail plan view of the igniter mechanism with the walls of the cylinder of the explosive engine to which it is attached in section. Fig. 3 is an enlarged detail view of the igniter parts similar to the view in Fig. 1, but showing in dotted lines the relative movements of the exhaust valve operating rod, and the igniter operating means by which the igniter mechanism or generator is rendered inoperative and a spark not produced when no charge is to be exploded in the cylinder because of the action of the speed governor through the exhaust valve operating means on the generator. This view is taken on line 3—3 of Fig. 2.

Similar characters of reference indicate similar parts throughout the several views.

1 is the engine cylinder, and 2 the main frame.

3 is the engine base.

4 is the fly-wheel on shaft 5 provided with a crank 6 operated by connecting rod 7 pivoted to the piston on the interior of the cylinder 1 in the usual or any desired manner.

The engine cylinder 1 is provided with the usual side opening adapted to receive the usual igniter block 8 which is provided with an inner extension 9 fitted through the opening and extending into the cylinder 1. In the horizontal opening through the block 8 extends a stationary electrode 10 which is preferably insulated from the igniter block 8 by suitable insulating material in the usual manner and not herein specifically shown, since it is the common practice to insulate the stationary electrode from the igniter block rather than the movable electrode. Outside the block 8 on the electrode 10 is provided means for the securement to the electrode 10 of the wire 11, such means preferably comprising a threaded outer end on the electrode 10 and the two threaded chamfered or polygonal nuts 12 and 13, between which one end of the wire 11 may be secured.

Secured to the igniter block 8 and preferably cast integral therewith is an arm 14 extending for a short distance approximately parallel with the outer wall of the cylinder 1 and provided at its forward extremity with the angular bearing portion 15 into which the shaft 16, on which is carried the armature or inductor, is journaled. The armature or inductor may be of any desired type as well as the construction of the field of the igniter but the preferred form is an armature or inductor of the form shown only in dotted lines as indicated by the ref-

erence character 17 in Fig. 1 of the drawings, which, although not specifically shown may consist of masses of laminated iron suitably joined together and of approximately the form shown in dotted lines in Fig. 1 and being mounted to oscillate with shaft 16, will, in a well known manner, produce rapid periodic reversals in the magnetic polarity of the cores 18 and 19 indicated in broken lines on Fig. 1 and will in a well known manner set up alternate currents in the coils surrounding them. The wound cores 18, 19 may consist of projections from the laminated iron plates indicated at 20, 21, which at their upper and lower extremities are joined by the magnet plates 22, 23.

While I have herein shown the invention applied to one specific form of generator or magneto and have to an extent shown and described the details of construction of such magneto or generator, it will be apparent that the invention may be applied by those skilled in the art to any type of magneto or generator whether of the oscillating type of armature or inductor or whether of the constantly rotating type of armature or inductor. It will also be apparent that the invention may equally be applied to magnetos or generators for furnishing electrical ignition whether the armature or moving part is of the wound type instead of the laminated metal or whether the field be of the ordinary form of winding.

The laminated cores 18, 19, may be wound in the manner common to this type, one end of the winding indicated by 24 being connected to the supporting block 25 in contact with sleeve 15 and secured thereto by set screw 25', which completes the circuit to the bearing block 8 and the movable electrode 26, which is also journaled in bearing block 8 and extends to the outside of the block, being provided at its outer extremity with the crank arm 27 and held normally in such position that the electrodes 10 and 26 are normally in contact with each other by means of the torsion spring 28, one end of which is secured to the igniter block 8 and the other end in engagement with the crank arm 27. The wire 11 already referred to as in contact with electrode 10 leads directly to the wound core 19, thus completing the electrical circuit. To the supporting block 25 is secured the laminated field members 20, 21, which carry the wound cores 18, 19. The end of the crank arm 27 on the movable electrode 26 is provided with an adjustable screw 29 provided with a lock nut and having a head at its lower extremity for engagement with the oscillating member 30, which is secured to rotate with the oscillating shaft 16 carrying the armature or inductor 17. The oscillating member 30 secured to the armature shaft 16 is provided with horizontally extending arms, the extremities of which are in engagement each with one end of coil springs 31, 32, which have their outer extremities secured to brackets 33, 34, extending laterally from the laminated field members 20, 21. The springs 31, 32 normally exert a tension on the oscillating member 30, thus holding the armature or inductor 17 in its normal position and offering elastic resistance to the rotation of the inductor or armature, which in order to rotate or oscillate must move with the oscillating member 30 through the medium of the armature shaft 16, to which both are secured. The oscillating member 30 is provided with a vertically extending projection or finger as indicated at 35 adapted for engagement by the reciprocating member 36 for the purpose of oscillating the armature or inductor 17 against the tension of springs 31, 32. The extension 15 carried on the igniter block 8 through the connecting portion 14 is provided with an extending branch as indicated at 37, the outer extremity of which carries a grooved roller or sheave 38, which serves as an anti-friction bearing and support for the reciprocating member 36, the free end of which adjacent the grooved roller or sheave 38 is adapted normally to engage the finger 35 to oscillate the armature or inductor. Reciprocating movement is imparted to the member 36 preferably from the crank shaft 5 of the engine, and a convenient way of accomplishing this purpose is to secure to crank shaft 5 a gear as indicated at 40, which meshing with the gear 41, is of suitable size to impart the desired speed to the igniter whatever the character of the engine.

In the present embodiment of the invention, as shown particularly in Fig. 1, the engine is of the single cylinder four-cycle type, the gears 40 and 41 being of proper proportions to impart the desired speed to the shaft 42 and gear 41 for operating the exhaust valve rod, as indicated at 43, which is accomplished by the action of the eccentric cam 44 keyed on shaft 42 and bearing against the anti-friction roller 45 carried at the upper extremity of the pivotal support 46 of the exhaust valve operating rod 43. The igniter operating member 36 may be operated from the shaft 42, which also carries the eccentric cam 44 in any desired manner, a convenient form being indicated in the drawings in Fig. 1 consisting of an eccentric secured to shaft 42 and carrying a strap 47 secured to the forward extremity of the igniter operating member 36.

It is well known in this art that means such as just described may be used for operating the exhaust valve operating rod and it is equally well known in explosive engines that centrifugal governors may be employed on moving parts of the engine in order to control the speed of the engine by

preventing the closing of the exhaust valve when the engine reaches or exceeds the given speed. In explosive engines of the type herein shown, the piston is employed as a pump for drawing the explosive material into the cylinder but when the exhaust valve of the engine is held open automatically the action of the piston within the cylinder in creating a vacuum will be to cause the air to rush into the cylinder when the exhaust valve is open, following the lines of least resistance, so that a charge will not be drawn into the cylinder when the exhaust valve is open and consequently there will be no explosion take place in the cylinder. Heretofore it has been the practice in the use of igniters to connect them up positively with the engine so that the igniter runs constantly with the engine and a spark is produced at each cycle of operation of the engine whether a charge of explosive has been drawn into the cylinder or not. If, therefore, the engine has reached or exceeded a given speed and the explosion has been cut out by reason of the action of the governor due to the excessive speed, no explosion can take place until the speed has been reduced to or below the given degree and yet the igniter mechanism must continue to operate and the spark is wasted together with the energy necessary to create it and the igniter mechanism has been subjected to the wear incident to such operation for no useful purpose. It is to obviate this condition of useless wear on the igniter mechanism that is one of the special purposes of this invention, as stated, and it is not important what specific means for governing the speed of the engine be employed but the common form of reciprocating exhaust valve operating rod has been shown as commonly operated on four-cycle engines and this is further shown under the control of an ordinary centrifugal governor comprising pivoted weighted members 50, 51, secured to the flywheel 4 or the crank shaft 5 of the engine and normally held in a given position by suitable springs 52, 53, which may be adjustable in order to vary their tension in a well known manner not necessary to describe for the purposes of illustrating the present invention. These spring controlled pivoted members 50, 51, may be connected with a suitable member slidably mounted on crank shaft 5, which preferably has an exterior cone shape and against which bears one end of the latch 54 which is pivoted at 55 on the main frame of the engine and has one end, as indicated at 56, adapted to engage with a notched member 57 on the exhaust valve operating rod 43. The usual operation of this form of governor is that, with the springs 52, 53 adjusted to have a given tension when the speed of the crank reaches or exceeds a given speed, the operation of the governor will cause the end 56 of the latch to be depressed so that it will engage the notched member 57 on the exhaust valve operating rod 43 and prevent the return of this rod when released by cam 44 and in this manner hold open the exhaust valve preventing further explosions of the engine because preventing the drawing in of a charge until the speed of the crank shaft falls below the given speed when the spring controlled members 50, 51 on the governor will act to release the exhaust valve operating rod and permit the exhaust valve to close, which will then cause the action of the piston to draw in a charge of explosive for the use of the engine.

It is obvious that even though the reciprocating member 36 which is shown as constantly operating from the crank shaft of the engine shall operate the igniter mechanism, the spark produced will be wasted if the exhaust valve is not closed so that a charge of explosive is provided within the cylinder. It is found by experience that it is very desirable to avoid all the wear and tear possible on the igniter mechanism. In order therefore that the igniter mechanism may be rendered inoperative and consequently no spark produced when there is no charge in the cylinder to be exploded by reason of the exhaust valve being automatically kept open due to the engine having passed a given speed and because of the governor control over the exhaust valve, I provide means for automatically stopping the operation of the igniter mechanism under the control of the exhaust valve operating means. In the present embodiment of the invention the exhaust valve being under the control of the exhaust valve operating rod 43 I secure to the rod 43, in any suitable manner, a support 60 carrying at its upper extremity a suitable anti-friction roller 61. In order that the igniter operating member 36 may be properly timed to release the spring controlled igniter mechanism, the rod 36 is provided with a wedge block 62 adjustably secured thereto by set screw 63. By this means the timing of the igniter mechanism is secured. Another wedge block similar to the block 62 but having its inclined face in the opposite direction is also adjustably secured on the igniter operating member 36, as indicated at 64, and this member is adjustably secured to the member 36 by set screw 65. The operation of the exhaust valve cut out in its relation to the igniter mechanism is best seen from an inspection of the parts depicting the exhaust valve operating rod 43 and the igniter operating member 36 at the extremes of their movements as indicated by the full and dotted lines representing those parts, as shown in Fig. 3.

The operation of the mechanism or as

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much thereof as pertains to the features of novelty herein described and claimed is as follows: The operator, desiring to start the engine, may turn the same in the usual manner, thus drawing in the charge of explosive into the cylinder. The operation of starting the engine will also impart movement to the igniter or generator operating member 36 through the gears 40 and 41, the shaft 42 and the eccentric secured thereto which operates the member 36. The movement of the member 36 causes its extremity adjacent the igniter mechanism to engage the upwardly extending arm 35 near its upper extremity and thus rotate the member 30, the shaft 16 and the armature or inductor of the generator carried thereon against the tension of springs 31, 32. This rotation or oscillation of the inductor or armature of the generator will cause a current to be generated which will pass through the electrodes 10 and 26 in the circuit already described. The adjustable wedge block 62 under control of set screw 63 on the igniter operating member 36 may be adjusted so that the forward end of the member 36 will become disengaged from the arm 35 on the oscillating member 30 at the time the current passing through the electrodes 10 and 26 is near its maximum strength. The sudden release of the oscillating member 30 being under the control of the springs 31, 32 will cause it to be returned to normal position, as shown in all of the figures, under considerable momentum which will carry the inductor or armature of the generator, the shaft 16 and the oscillating member 30 beyond the normal position and will cause the extremity of the oscillating member 30 adjacent the crank arm 27 to strike the adjustable screw-threaded member 29. This will rotate the crank arm 27 against the action of spring 28 and will at the same time separate the movable electrode 26 from the stationary electrode 10. The current being at about its maximum strength, as stated, a spark will then pass between the electrodes 10 and 26.

The engine having reached or passed a given speed by reason of which the governor mechanism has locked the exhaust valve operating rod 43 against closing the exhaust valve, the support 60 on the exhaust valve operating rod 43 will be carried to the position indicated in dotted lines in Fig. 3 by which the antifriction roller 61 carried thereby will pass under the adjustable wedge block 64 and operate the igniter operating member 36 to the position indicated in dotted lines also in Fig. 3. In this position it will be seen that although the igniter operating member 36 continues to operate it will be held in a position where its operation will not affect the igniter mechanism or generator which will remain inactive until the exhaust valve operating rod 43 is returned to normal.

By means of the mechanism as described, it will be seen that the igniter mechanism or generator including the spring controlled oscillating member 30, the armature shaft 16 together with the armature 17 and the movable electrode will all be cut out and remain inactive at all times when the engine is running above normal speed and it is not desired to ignite a charge in the cylinder. It will also be seen that the arrangement of the parts as described for operating the oscillating form of igniter or generator herein shown is exceedingly simple and direct and that by directly operating the oscillating means controlling the armature or inductor through the medium of the reciprocating member 36 I provide an exceedingly simple and durable mechanism that is certain in its operation and not liable to get out of order, and furthermore the movable parts of the igniter being rendered inactive at all times when the exhaust valve is open, there is no useless current generated in the igniter as is the case with the igniters positively operated from the crank shaft of the engine without means for cutting out the operation of the igniter mechanism under the control of the exhaust valve operating means or the speed governor.

In order that the invention might be fully understood the details of the preferred embodiment thereof have been thus specifically described but it is not desired to be limited to the exact details of construction thereof, for it will be apparent that many modifications may be made by those skilled in the art without departing from the purpose and spirit of the invention, and what I claim is—

1. In an explosive engine, the combination with a magneto, of means for operating the magneto by the running of the engine, a speed governor operated by the engine, and means under the control of the speed governor for rendering the magneto operating means inoperative when the engine passes or exceeds a predetermined speed.

2. The combination in an explosive engine having a speed governor, and an exhaust valve operating rod operatively connected with the speed governor, of a magneto, means for operating the magneto by the running of the engine, and means adapted to be operated by the movement of the exhaust valve operating rod for rendering the magneto operating means inoperative.

3. In combination with an internal combustion engine, a speed governor associated with the engine and operatively connected therewith, ignition mechanism for said engine comprising make and break spark electrodes and a magneto, means operated by the engine for effecting the operation of both the magneto and spark electrodes in

timed relation one to the other, and mechanism controlled by said speed governor for rendering said engine operated means incapable of effecting the operation of the magneto and spark electrodes whenever the engine passes or exceeds a certain predetermined speed.

4. An internal combustion engine of the hit and miss type having an exhaust valve, an exhaust valve operating rod and a speed governor in operative relation to said exhaust valve operating rod arranged to shift the latter to hold the exhaust valve in open position whenever the engine exceeds a certain predetermined speed, in combination with an igniter comprising make and break electrodes, a magneto for supplying ignition current to said igniter, a reciprocating push rod driven by the engine for effecting actuation of the magneto and igniter electrodes together with means operated by the exhaust valve operating rod for rendering the reciprocating push rod incapable of actuating the magneto and igniter electrodes whenever, when the engine exceeds a certain predetermined speed, the exhaust valve operating rod and the governor cooperate to hold the exhaust valve in open position, as aforesaid.

5. In combination with an internal combustion engine, a speed governor driven from the engine, ignition mechanism for said engine comprising an igniter and a magneto for supplying ignition current to said igniter, actuating mechanism driven by the engine for effecting the operation of the magneto, and devices controlled by the speed governor for rendering said actuating mechanism incapable of effecting the operation of the magneto whenever the engine passes or exceeds a certain predetermined speed.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 22nd day of January, A. D. 1910.

EDMUND JOSEPH KANE.

Witnesses:
A. L. SPRINGER,
M. W. CANTWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

2–251

Room No. 63

Address only "The Commissioner of Patents, Washington, D. C."

Letter No. —

Department of the Interior,
United States Patent Office,
Washington, D. C., Oct. 20, 1915.

Examiner of Interferences:

An interference is found to exist between the following cases, and in respect to the invention therein specified, to wit:

Cases

1. Name, Edmund Joseph Kane.
Post-office address, 123 South Waller St., Chicago, Ill.
Title, Electric Igniters.
Filed Jan. 14, 1915. Ser. No. 2097. Pat'd —— —, ——. No. —. Division of Application No. 541,428, filed Feb. 2, 1910.
Attorney-, Brown, Nissen & Sprinkle, of 312 So. Dearborn St., Chicago, Ill.
Associate att'y, —— ——, of ——.
Assignee, —— ——, of ——.

2. Name, Emil Podlesak.
Post-office address, Racine, Wis.
Title, Current-Generator and Igniter for Internal-Combustion Engines.
Filed Dec. 23, 1914. Ser. No. 878,726. Pat'd —— —, ——. Reissued Feb. 9, 1915. No. 13,878. (Original No. 1,055,076, dated Mar. 4, 1913, S. No. 690,921.)
Attorney, Lynn A. Williams, of Monadnock Block, Chicago, Ill.
Associate att'y, —— ——, of ——.
Assignee, —— ——, of ——.
Intf. Number 39,181.
Intf. Declared Oct. 26, 1915.
Statements Due Nov. 29, 1915.

3. Name, —— ——.
Post-office address, ——.
Title, ——.
Filed —— —, ——. Ser. No. —. Pat'd —— —, ——. No. —.
Attorney, —— ——, of ——.
Associate att'y, —— ——, of ——.
Assignee, —— ——, of ——.

Invention

Count 1. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator

having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

Count 2. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

Count 3. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

Count 4. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted, and a trip device for actuating the rotor.

Count 5. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

Count 6. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

Count 7. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

Count 8. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

Count 9. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

The relation of the counts of the interference to the claims of the respective parties is a- follows:

Counts.	Kane.	Podlesak.
1	7	13
2	8	14
3	9	15
4	10	19
5	11	20
6	12	21
7	13	22
8	14	23
9	15	24

Counts compared.

A. R. Benson, Examiner. A. R. B.

39,181—5

Statement of Podelsak. Filed Nov. 27, 1915. Approved Dec. 17, 1915. F.

In the United States Patent Office

Before the Examiner of Interferences

Interference No. 39,181

KANE

v.

PODELSAK.

Subject-Matter: Current Generator and Igniter for Internal Combustion Engines

PRELIMINARY STATEMENT OF EMIL PODLESAK

STATE OF ILLINOIS,
County of Cook, ss:

Emil Podlesak, a party to the above-identified interference, being first duly sworn, states:

1. That he first conceived the invention involved in this interference during the last week of November, 1910.
2. That he first made the drawings of this said invention on or about December 15, 1910.
3. That he disclosed this said invention to others on or about December 15, 1910.
4. That he reduced this said invention to practice during February, 1911.
5. That this said invention is in quite extensive use, there being now upwards of seventy thousand (70,000) devices embodying said invention now in use.
6. That he made no applications for Letters Patent of any foreign countries prior to his filing an application (original Ser. No. 690,921, filed April 15, 1912), for Letters Patent of the United States of America.

Emil Podlesak.

Sworn to and subscribed before me this 22nd day of November, A. D. 1915.

Ellen H. Clegg, Notary Public. [Seal.]

Paper No. 12

Washington, D. C., December 17, 1915.

In re Interference No. 39,181

Interference No. 39,181

PODELSAK

v.

KANE.

Before the Examiner of Interferences

The date of conception of the invention in issue alleged in the preliminary statement of Podelsak, the junior party, being subsequent to the filing date of Kane, the senior party, notice is hereby given that judgment on the record will be rendered against said Podelsak unless he shall within thirty days show good and sufficient cause why such action should not be taken.

The dates of filing and serial numbers of the respective applications are as follows:

Emil Podelsak filed Dec. 23, 1914, Ser. No. 878,726, reissued Feb. 9, 1915, No. 13,878, original patent No. 1,055,076, dated Mar. 4, 1913, Ser. No. 690,921, filed Apr. 15, 1912.

Edmund Joseph Kane filed Jan. 14, 1915, Ser. No. 2,097, division of Ser. No. 541,428, filed Feb. 2, 1910.

H. E. Stauffer, Examiner of Interferences.

File No. 2449

39,181—20

Docket Clerk,
Feb. 1, 1916.
U. S. Patent Office.

In the United States Patent Office

Interference No. 39,181

PODLESAK

vs.

KANE.

MOTION TO DISSOLVE

Now comes Emil Podlesak, the junior party in the above entitled interference, and for cause why judgment should not be entered against him, shows: That the party Kane has no right to make

the claims of the issues, first, because of laches and estoppel; second, because said claims, all of which were taken from the reissued patent of the party Podlesak, when properly construed will not read upon Kane's structure; and third, because the terms of the claims if expanded in meaning in an attempt to read them on the Kane structure, would also read upon devices of the prior art. Upon these grounds, Podlesak moves hereby to dissolve the interference, and further moves that all proceedings be stayed pending the final determination of the questions thus raised.

(1) Kane has no right to make the claims of the issues, because, disregarding the fact that they will not properly read upon his structure, and were drafted to read specifically upon the different Podlesak structure, Kane has been guilty of laches in presenting claims to the subject matter he is now attempting to cover, in that he did not make such claims at his date of filing, February 2, 1910, nor at any time subsequent thereto until April 17, 1915, more than two years after the date of issue of the original Podlesak patent No. 1,055,076, March 4, 1913, and more than two months after the said Podlesak patent had been reissued (February 9, 1915). Kane is estopped to deny that he had notice of the Podlesak invention, and of the use of the same by the Webster Manufacturing Company, Podlesak's assignee, without any adverse claim on Kane's part during the period mentioned, because under date of September 3, 1915, Kane filed a certain petition and under date of September 7, 1915, filed an affidavit, in both of which he alleges facts which constituted such notice to him. The petition and affidavit referred to are papers 7, 9 and 10 in the Kane application file and will be referred to in extenso at the hearing on this motion.

(2) Kane has no right to make claims 1, 2, 3, 4 and 5 of the issues, because he has not two springs, one of which holds the rotor arm and the igniter arm in engagement. These claims which appear as Nos. 13, 14, 15, 19 and 20 in the Podlesak patent, specify spring means holding the rotor in a given position and other spring means operating to hold the rotor arm and the movable electrode arm in engagement. In the reissue patent these springs are marked 23 and 33 respectively, and the spring 33 must be of a definite tension, less than that of the spring 23, but bearing a fixed relation thereto strong enough to hold the arm 32 against the arm 31 of the rotor (Fig. 3), but relatively weak enough so that it will permit the arm 32 to be thrown back by the hammer blow of the arm 31 in operation. In Kane's structure, the springs claimed to correspond to the foregoing are marked 31-32, and 28 respectively. The spring 28 is a torsion spring, and does not bear the same relation to the other springs which is found in the Podlesak patent. In fact, Kane's arms are not normally in contact, and the only function of his torsion spring 28 is to keep his igniter contacts closed until they are opened by the arm on the magneto shaft. The relation of his arms cannot be changed by adjustment without affecting the timing of the spark. By reference to the record it appears that the claims in

question were allowed to Podlesak for his specific structure, which Kane does not disclose.

Kane has no right to make claims 4 to 9 inclusive of the issues, for the following reasons:

Count 4 specifies not only the spring means included in the first three counts, but "an integral bracket upon and in which all of the aforesaid mechanism is mounted." In the Podlesak patent this bracket is a separate element marked 8 and described specifically in lines 24 et seq. of page 2 as "a shelf or bracket 8 which forms a base to which the generator C is removably secured by stud bolts 9." Thus the word "bracket" is used in the Podlesak claims in its proper and normal sense and the element is a separate unitary element not included in or forming a part of the generator or any other element of the combination. Supplementing this, it is pointed out that Podlesak's magneto is complete, with its bearings, shaft, rotor and springs, all assembled and supported as a unit structure, and as such bolted to the bracket or shelf. In the Kane structure on the other hand, there is no "integral bracket" or shelf, as a separate element. Kane's magneto has its shaft bearing directly connected to the base of the spark plug or igniter 8, so that the element of a shelf or bracket is entirely lacking and it cannot be said that Kane has any element "upon and in which all of the aforesaid mechanism is mounted." The "aforesaid mechanism" of Podlesak includes the complete generator unit, and the trip lever and the springs mounted upon and connected therewith. Podlesak's generator can be removed from the bracket or shelf upon which it is mounted, but if any attempt be made to remove Kane's generator, it immediately results in disassembling the entire generator, this generator being directly connected through its shaft bearings with the spark plug.

Count 5 includes not only the springs of diverse strength already referred to, but also "a unitary bracket comprising a body * * * and a shaft extending laterally therefrom and integral therewith upon which the said generator is mounted." The words "unitary bracket" refer to the same part 8 as the "integral bracket" of the preceding count, and the same remarks apply thereto.

Count 6 includes the springs already mentioned, and also "an integral bracket having a body * * * and a shelf laterally extending therefrom and upon which the said generator is mounted." Kane has the element of a body to his igniter, but he has no shelf upon which a generator is mounted, nor has he an integral bracket in any proper sense of the word.

Count 7 includes in addition to the springs as aforesaid, "a supporting shelf or base extending laterally." The element of a shelf or base in this count as in the preceding counts, being properly construed by the Podlesak specification, is entirely lacking from the Kane structure.

Count 8 includes the springs as aforesaid and also includes "a supporting base extending laterally," and "a magneto generator mounted on said base." Kane has no base, and has no magneto generator mounted on a base.

Count 9 includes the springs aforesaid, and also includes "a laterally extending base" and a "magneto generator having a rotor and mounted on said base." Kane has no laterally extending base, nor has he a magneto generator mounted on the base.

(3) In construing the counts of the issues of this interference, and in applying them to the structures of the respective parties, the following references are to be considered as showing the state of the art prior to the filing dates of Kane and of Podlesak. These references show that neither Kane nor Podlesak was a pioneer inventor, that claims for their respective structures must be narrowly construed, and that Podlesak's element of a separate base, bracket or shelf, upon which the magneto and associated parts are mounted cannot be construed as identical with a protruding part of the magneto such as Kane's bearing member 15

296,341 Maxim
357,193 Gavillet et al.
464,347 Woolley
480,272 Nichols
663,643 Simms et al.
780,221 Packard
811,122 Bellamy
820,535 Weber
862,568 Longenecker
867,696 Botkowski
902,499 Le Pontois
909,264 Wattles
916,312 Hennig
938,123 Charter
943,697 Mueller
946,816 Bates
980,537 Leavitt
990,935 Wattles

British patent 25,148 of 1907 Ashton
French " 395,438, 1909

Of the foregoing patents, those to Wattles, Bates and Weber are of record. The patents to Woolley, Simms, Packard, Weber, Wattles (2), and Bates, are relied upon to show that it was not original with Kane to put springs on his rotor arm and igniter arm, nor to secure the magneto directly to the igniter or spark plug in one unit, nor to so connect the igniter contacts and the rotor of the magneto that these parts would properly cooperate with suitable timing. The Weber patent 820,535 and the Hennig patent 916,312, both show a plurality of springs, and both of them show the magneto connected to the plug. The Weber patent shows an adjustable anvil screw 27 carried in the lever arm connected to the movable electrode, and the general relation of the parts is the same as in Kane's structure. The Wattles patent 909,264 shows a magneto with a projecting bracket portion of its frame or body secured directly to the base of the plug or igniter.

British patent 25,148 of 1907 shows an arrangement wherein the magneto and igniter are closely associated and connected together so as to operate correctly in unison, but the magneto and the igniter, though thus connected are still independent units. This patent is to be read with the Wattles patent or the Webber patent 820,535, which shows a magneto unit mounted on a support forming the flange or head of the igniter body.

The other patents cited are to be read with the foregoing, and their application is sufficiently evident from the explanation given.

Emil Podlesak, By Edward E. Clement, His Attorney. Washington, D. C., February 1, 1916.

Intf. No. 39,181, Paper No. 21

Rec. Vol. 118, Page 474

S. E. T.

In the United States Patent Office

Patent Interference No. 39,181

PODLESAK

v.

KANE

MOTION TO DISSOLVE

Order

Electric Lighters

Reissue patent of Emil Podlesak granted February 9, 1915, No. 13,878, on application filed Dec. 23, 1914, original patent granted March 4, 1913, on application filed April 15, 1912.

Application of Edmund J. Kane filed January 14, 1915, No. 2097, division of application filed February 2, 1910.

Mr. H. R. Van Deventer and Mr. Edward E. Clement for Podlesak.

Messrs. Brown, Nissen & Sprinkle for Kane.

The motion to dissolve filed by Podlesak will be set for hearing as to ground 2 thereof, but not as to grounds 1 and 3. The alleged delay in the presentation of the claims by Kane would not constitute ground for dissolving the interference and the party Podlesak being a patentee cannot allege that the claims of the issue should be more narrowly construed than the plain terms would warrant.

Thomas Ewing, Commissioner. February 3, 1916.

Docket Clerk,
Mar. 9, 1916.
U. S. Patent Office.

File No. 2449

39,181—29

In the United States Patent Office

Interference No. 39,181

PODLESAK

vs.

KANE.

BRIEF FOR PODLESAK ON HIS MOTION TO DISSOLVE

This is an interference between the application of Kane, filed i
January, 1915, as a division of an older application filed in Febr
ary, 1910, and patent No. 13,878 of Podlesak, reissued February 9
1915, the original patent having been numbered 1,055,076, issue
March 4, 1913. The issues are claims 13, 14, 15, 19, 20 21, 22, 2
and 24 of the Podlesak patent which were copied by Kane in a
amendment to his divisional application filed January 14, 1915.

The said party Kane is also one of the parties to a copending in
terference, Milton v. Kane, No. 39,013, where the party Milton ha
a patent from which Kane copied the claims of the issues. In sai
interference the two structures of Milton and Kane are identical.

The relation of the three cases thus involved is as follows:

Kane filed his parent application February 2, 1910, and filed th
divisional application involved in both the aforesaid interference
January 14, 1915.

Milton filed his application October 28, 1910, and his patent wa
granted May 12, 1914.

Podlesak filed his original application April 15, 1912, his origina
patent No. 1,055,076 was granted March 4, 1913, and reissue
February 9, 1915, with the number 13,878.

October 28, 1910, four months before Kane filed his parent ap
plication, the party Milton applied for a British patent, No. 24,83
of 1900, of which a properly certified copy has been filed and made
of record in the Milton interference No. 39,013. The structure dis
closed and claimed in said British patent and the structure disclose
in the Milton U. S. patent, and the structure disclosed in the Kane
application, are all identical, indicating a common origin, and this
identity has led to charges of fraud between the parties, which, how
ever, do not involve Podlesak, as his structure is radically different
in design and functioning. By reason of the identity of the Kane
and Milton structures, any claim which can be read on one of them
must read upon the other, and therefore any claims in a later case

which can be read upon Kane, must be anticipated by the Milton British patent.

The Podlesak patent and its reissue were granted by the Patent Office with presumptive knowledge of the said Milton British patent, as well as of the Milton U. S. application, and the Podlesak claims were granted therefore in view of said patent, and without being suggested for interference to Milton, and by virtue of the grant they must be presumed to be valid and not to be anticipated by the patents of the prior art including the Milton British patent aforesaid.

In the interference No. 39,013, Milton v. Kane, Milton, the junior party, has brought a motion to shift the burden of proof, on the ground that he was entitled to the date of his British patent, and said motion has been granted by the Examiner of Interferences, which fact has only been ascertained by your petitioner on the 6th day of March, upon inquiry, he not being a party to the said Milton-Kane interference.

By the decision of the Patent Office in the companion interference, the presumption arises that Milton and not Kane is the first inventor of the single identical structure which is the subject of both their claims; and the burden of proof rests heavily upon Kane to overcome this presumption, dates having been set for taking testimony, in default of which judgment will be entered in favor of Milton.

In the present interference, Kane has no right to make Podlesak's claims, and a motion has been brought by Podlesak to dissolve the interference on that ground, there being set up three sets of facts as supporting said ground: (1) because of laches and estoppel. (2) because the claims do not read upon Kane's structure, and (3) because the forms of the claims if expanded in meaning to read on the Kane structure would also read upon structures of the prior art.

In response to the filing of the motion, the following order was issued by the Commissioner:

"The motion to dissolve filed by Podlesak will be set for hearing as to ground 2 thereof, but not as to grounds 1 and 3. The alleged delay in the presentation of the claims by Kane would not constitute ground for dissolving the interference and the party Podlesak being a patentee cannot allege that the claims of the issue should be more narrowly construed than the plain terms would warrant."

In making the foregoing order, the facts were not before the Commissioner, and especially the fact of the existence and priority of the Milton British patent and the action of the Examiner of Interferences in shifting the burden of proof against Kane and thereby destroying every presumption previously arising in Kane's favor as against anyone else, and substituting a strong presumption against him.

Kane made no claims whatsoever to the subject matter of the present interference, for nearly five years after the publication in June, 1910, of the Milton British patent above mentioned; and for more than two years after the Podlesak original patent No. 1,055,076 had been issued; and more than four years after Milton had filed his application upon which his patent No. 1,096,048 involved in the

said interference No. 39,013, was granted to him; and more th four months after the said grant. And your petitioner shows t during the whole of the elapsed time from February 2, 1910, wh Kane filed his parent application, until April 17, 1915, after he fi his divisional application, he claimed only matters foreign to t present interference, and prosecuted his application to a final re tion, as your petitioner is informed and believes; and that it was until after thus failing to secure any claims on what he had alleg to be his invention for nearly five years, that he filed a divisio application and copied claims taken from your petitioner's patent

The question of estoppel is raised only incidentally because of notice to Kane by publication of the several patents, British a American, of Milton and Podlesak, that they were claiming th own structures, his delay raising a presumption of acquiescence his part which he should now be estopped to deny. As estoppel ground for judgment and not for dissolution, it need not be furth considered here.

Kane should be held estopped, however, to raise the question patentability of the claims to Podlesak, while claiming them hi self, since Podlesak has a patent already, and especially since Pod sak's original patent was issued more than two years before Ka ever copied the claims.

The fact of delay in making the claims brings Kane squar under the decision in

Shreeve v. Grissinger, 202 O. G., 951,

and every doubt in the case must be resolved against him

Kane has no right to make claims 1, 2, 3, 4 and 5 of the iss because his disclosure does not show or des-ribe a spring means ope ating on the igniter arm to hold it in engagement with the rotor ar The spring 28 of Kane does not operate on the igniter arm to hol it in engagement with the rotor arm 30 but, as illustrated in Figur 2 and 3 and described on page 3, lines 11 to 14 of Kane's origin disclosure, is "a torsion spring" mounted "in a manner to cause co tacts 26 and 10 to normally remain in contact," and neither th drawings nor the description of Kane's original disclosure show th anvil 29 in contact with the rotor arm 30, but to the contrary, th original disclosure specifically states, on page 3, lines 27 to 29, tha "the tension springs 31 and 32 normally maintain the arm membe 30 in a position so that one of its arm is close to the anvil 23," an again, on page 4, lines 12 to 14, that "Owing to the elasticity springs 31 and 32 and the momentum of member 30, the latter wi be carried slightly past its normal position, and engage avil 29 which indicates clearly that it was not intended that the anvil 2 should normally engage the member 30. Thus Kane, who specifically shows and describes a spring means operating to hold the ignite contacts normally closed and the anvil 29 close to the arm 30 cannot claim the same means as "spring means * * * operating on the first-mentioned arm (igniter arm 27) to hold the same in engagement with the second-mentioned arm (rotor arm 30). This normal engagement of the two arms mentioned is clearly shown in the

Podlesak drawings and the terms of count 1 are specifically descriptive of this showing. Further, the party Kane's structure so closely resembles the structure disclosed in the aforesaid British patent to Milton, No. 24,838 of 1909, that any construction put upon the terms of the issues to make them read on the one would make them read on the other. Other patents disclosing the use of two springs, a strong spring for operating the rotor and a weaker spring for the igniter contacts, are Weber, 820,555, May 15, 1906; Wattles, 990,935, May 2, 1911, and Podlesak, 1,024,418, April 23, 1912; the patent to Wattles being a reference of record in the original Podlesak patent No. 1,055,076.

Kane has no right to make claim 2 of the issue because, in addition to the above reasons, the function of the "means for adjusting the relation of the arms" disclosed by Kane is not the same as that which he claims in claim 2. Kane, in his original disclosure, on page 3, lines 15 to 17, says, "The shoe 29 is adjustably mounted on the free end of arm 27, so that timing of the engine may be varied slightly by such adjustment," while claim 2 of the issue calls for "means on one of said arms for adjusting the relation of the cams and thereby the relation of the movable electrode to the rotor." The purpose of the adjustment described in the count is to vary the timing of the spark in relation to the electrical cycle of the magneto, which has nothing to do with the timing of the spark in relation to the cycle of the engine. This will be clear when it is noted that the electrical cycle of the magneto or its rotor speed is constant regardless of variations in the speed of the engine.

Kane has no right to make claim 4 of the issue for the reasons given in regard to the first three counts and also because his original disclosure does not show "an integral bracket upon and on which all of the aforesaid mechanism is mounted." In the Podlesak patent this bracket is a separate element marked 8 and described specifically in lines 24 et seq., of page 2 as "a shelf or bracket 8 which forms a base to which the generator C is removably secured by stud bolts 9." Thus the word "bracket" is used in the Podlesak claims in its proper and normal sense and the element is a separate auxiliary element not included in or forming a part of the generator or any other elements of the combination. Supplementing this, it is pointed out that Podlesak's magneto is complete, with its bearings, shaft, rotor, and springs, all assembled and supported as a unit structure, and as such, bolted to the bracket or shelf. In the Kane structure, on the other hand, there is no "integral bracket" or shelf as a separate element. Claim 4 cannot be construed to read on the disclosure of Kane without overclaiming the same thing as separate elements. What constitutes Kane's magneto is described in the paragraph beginning with line 9 on page 2 of his original disclosure, which reads: "On block 6 is an arm 14 having a bearing member 15 at its outer end. On the bearing member is journaled a shaft 16, which carries the armature or inductor 17. The inductor 17 rotates between the field cores 18 and 19. The cores 18 and 19 are provided with suitable alternating windings and formed on the pole pieces 20 and 21, and the latter are joined by fixed magnets 22 and 23. The pole pieces 20 and 21 are carried on an extension 24 formed on the bearing member 15."

Nowhere in Kane's original disclosure does he refer to the member 15 as other than a "bearing member," and which is certainly a part of the magneto generator such as could only be designated by the term "a generator having a rotor," in claim 4 of the issue. Kane's magneto has its shaft bearing directly connected to the base of the spark plug or igniter 8, so that the element of a shelf or bracket is entirely lacking and it cannot be said that Kane has any element "upon and in which all of the aforesaid mechanism is mounted." The "aforesaid mechanism" of Podlesak includes the complete generator unit, and the trip lever and the springs mounted upon and connected therewith. Podlesak's generator can be removed from the bracket or shelf upon which it is mounted, but if any attempt be made to remove Kane's generator, it immediately results in disassembling the entire generator, this generator being directly connected through its shaft bearings with the spark plug.

Kane has no right to make claim 5 of the issues for the reasons given in regard to the first three claims, and also because the "unitary bracket" refers to the same part as the "integral bracket" of count 4, the argument to count 4 therefore applying, and further because Kane discloses no "unitary bracket comprising a body * * * and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted." Kane, who in his original disclosure shows and describes the member 15 as a "bearing member," in which is "journaled a shaft 16 which carries the armature of the inductor," and which is therefore a part of the magneto, cannot claim it as a "shelf" for supporting the magneto, as the terms "shelf" and "magneto" in the counts designate different elements.

Kane has no right to make claim 6 of the issues because *because* this includes the "spring means" already referred to, and also an "integral bracket having a body * * * and a shelf laterally extending therefrom and upon which the said generator is mounted." While Kane has the element of a body to his igniter he has no shelf, and the term "shelf" cannot be construed to indicate the bearing member 15 forming a part of the element designated by a former term, in the same count, "a generator having a rotor."

Kane has no right to make claims 7, 8 and 9 for reasons above given, and further because count 7 includes in addition to the springs as aforesaid, "a supporting shelf or base extending laterally." The elements of a shelf or base in this count as in the preceding counts, being properly construed by the Podlesak specification, are entirely lacking from the Kane structure.

Court 8 includes the springs as aforesaid and also includes "a supporting base extending laterally," and "a magneto generator mounted on said base." Kane has no base, and has no magneto generator mounted on a base.

Count 9 includes the springs aforesaid, and also includes "a laterally extending base" and a "magneto generator having a rotor and mounted on said base." Kane has no laterally extending base, nor has he a magneto generator mounted on the base.

All the issues must be construed in the light of the disclosure in Podlesak's patent, from which they were taken, and their language must be given its ordinary and unstrained meaning, when read upon his structure, and cannot be in the slightest degree distorted, strained, or expanded to read on a different structure, such as that of Kane, or Milton.

Wilson and Forrest v. Ellis, 211 O. G., 286.
Sinclair v. Engel, 147 O. G., 769.
Curtis v. De Ferranti v. Lindmark, 171 O. G., 215.
General Electric Co. et al., v. Steinberger, 206 O. G., 1101.

Since no claim in this interference can be read on the Kane structure without also reading on the Milton structure shown in the British patent, any adverse decision at the present time in the present interference would have the sole effect of holding the claims of Podlesak's patent No. 13,878 invalid, in view of the Milton British patent, without awarding them to either Kane or Milton. Priority cannot be awarded to Kane for the reasons above stated, nor to Milton because he is not a party to this interference, he already has a patent, and has not attempted to make Podlesak's claims.

The question of validity of Podlesak's claims cannot be raised by either party hereto under present practice.

Emil Podlesak, By Edward E. Clement, His Attorney.

Hearing: March 9, 1916

39,181—32.

S. E. T.

In the United States Patent Office

Patent Interference No. 39,181

PODLESAK

v.

KANE.

Electric Lighters

MOTION TO DISSOLVE

Reissue Patent of Emil Podlesak Granted February 9, 1915, No. 13,878, on Application Filed December 23, 1914; Original Patent Granted March 4, 1913, No. 1,055,076, on Application Filed April 15, 1912.

Application of Edmund J. Kane Filed January 14, 1915, No. 2067. Division of Application Filed February 2, 1910.

Mr. H. R. Van Deventer and Mr. Edward E. Clement for Podlesak.
Messrs. Brown, Nissen & Sprinkle for Kane.

Podlesak moves to dissolve the interference and ground 2 of the motion alone has been set down for hearing. This ground alleges that Kane has no right to make the claims corresponding to the issue counts.

The counts are:

1. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first mentioned means and operating on the first mentioned arm to hold the same in engagement with the second-mentioned arm, and a trip device for actuating the rotor.

2. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means and operating on the first-mentioned arm to hold the same in engagment with the second-mentioned arm, a trip device for actuating the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

3. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, and spring means operatively connected with the rotor for holding the same in a predetermined position.

4. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first mentioned arm to hold the same in engagement with the second-mentioned arm, an integral bracket upon and in which all of the aforesaid mechanism is mounted and a trip device for actuating the rotor.

5. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and therefore the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor.

6. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm on the rotor, a trip finger on the rotor, a push rod for operating the trip finger, a spring tending to hold the arm of the electrode into engagement with the arm of the rotor, spring means operatively connected with the rotor for holding the same in a predetermined position, and an integral bracket having a body in which the said electrodes are mounted and a shelf laterally extending therefrom and upon which the said generator is mounted.

7. The combination of an igniter frame, comprising a body having relatively fixed and movable electrodes mounted therein, a supporting shelf or base extending laterally therefrom and integral therewith; an electric current generator comprising field magnet and a rotor, mounted on said base; spring means for holding the rotor in a predetermined position; an arm on the rotor; an arm on said movable electrode adapted to engage with the first-mentioned arm; spring means for bringing said two arms into engagement; and a trip finger on the rotor.

8. The combination of an igniter frame comprising a body having relatively fixed and movable electrodes mounted therein, a supporting base extending laterally therefrom and integral therewith, with an internal combustion motor, a magneto generator mounted on said base and having a rotor, spring means tending to hold the rotor in a predetermined position, an arm on the rotor, an

arm on said movable electrode adapted to engage with the first-mentioned arm, spring means for bringing the first-mentioned arm into engagement with the second-mentioned arm, a trip finger on the rotor, and means operable by said motor for actuating the trip finger.

9. The combination of an igniter frame, comprising a body and a laterally extending base, with an internal combustion motor, a magneto generator having a rotor and mounted on said base, spring means tending to hold the rotor in a predetermined position, a trip finger on the rotor, a reciprocatory push rod driven by the motor for actuating the trip finger, a fixed electrode and a movable electrode mounted in the body and adapted to make and break contact with each other within the combustion chamber of the motor, an arm on the rotor, an arm on the movable electrode adapted to engage with the arm of the rotor, spring means for bringing the arm of the movable electrode into engagement with the arm of the rotor, and means on one of said arms for adjusting the relation of the arms and thereby the relation of the position of the movable electrode to the rotor.

Podlesak is a patentee and the counts are claims taken from his patent. The invention relates to igniters for internal combustion engines of the make and break type. In the Podlesak patent the electrodes are designated 3 and 4, respectively, 3 being the fixed and 4 the movable electrode. The electrodes are normally separated and are mounted in a cylindrical body 1 passing through an opening in the wall of the cylinder. The outer end of the body 1 is formed with a plate 5 by means of which the body is fastened to the cylinder. Extending from the portion 5 is a shelf, bracket or base to which the generator is secured. The rotor 20 of the generator is mounted on a shaft 21 and this shaft has at one end oppositely extending arms 22 to which are connected aliming springs 23. At the opposite end of shaft 21 there are arms 25, 31. Arm 25 is engaged by the free end of a push rod 26 and arm 31 is normally engaged by an arm 32 on the outer end of the movable electrode. 33 is a spring of less strength than springs 23 which causes or tends to cause the engagement of arm 32 with arm 31. The engagement of arms 31 and 32 is made through an adjustable contact screw 35 on the latter arm. Push rod 26 is actuated from the engine and after rocking shaft 21 through arm or trip finger 25 the rod slips off the trip finger and shaft 21 and rotor 20 carried thereby are snapped back to and beyond their normal position by springs 23. On the return movement of the shaft, arm 31 strikes arm 32 on the movable electrode a hammer blow effecting a quick separation of the electrodes which had been previously brought together.

In the Kane construction 10 and 26 designate the fixed and movable electrodes, respectively, of the igniting device. 8 is a block or body having an arm 14 provided with a bearing member 15 in which is journaled the shaft 16 of the rotor. This shaft has oppositely extending arms 30,30, to which are connected relatively strong aliming springs 31, 32. Shaft 16 is also provided with an arm or trip finger 35 acted upon by a reciprocating rod 36, 62 actu-

ated from the engine. The shaft 26 is connected to the movable electrode and is acted on by a spring 28 of less strength than springs 31, 32. Shaft 26 is provided with an arm 27 having at its free end an anvil in the form of a screw threaded member 29 which can be adjusted in its relation to one of the arms 30 on the rotor shaft. As shown the anvil does not contact with arm 30 and the electrodes are normally in contact. The spring 28 on shaft 26 of the movable electrode tends to bring the arm 27 or the anvil carried thereby into engagement with arm 30 on the rotor shaft. When rod 36, 62, is reciprocated the rotor is rocked through the rod acting on arm 35. When the rod slips off the arm the rotor is returned to and beyond normal position by springs 31, 32, the anvil being struck a hammer blow by one of the arms 30, causing a separation of the electrodes.

All of the counts include in one form or another the relatively fixed and movable electrode, an arm on the movable electrode, an arm on the rotor, spring means holding or tending to hold the rotor in a given position and a spring or spring means holding or tending to hold the arm of the movable electrode in engagement with the arm on the rotor. Some of the counts specify that the spring or spring means acting on the movable electrode arm is of less tension than the other spring or spring means.

It is the moving party's contention that the party Kane does not disclose the element stated in count 1 as "spring means of less tension than the first mentioned means and operating on the first mentioned arm to hold the same in engagement with the second mentioned arm." The first mentioned arm is the arm on the movable electrode and the second mentioned arm is the arm on the rotor with which it co-operates. As originally shown and described the anvil 29 in the arm 27 of the Kane construction is not normally held in engagement with the arm 30 on the rotor shaft.

Kane answers the contention of the moving party with respect to the limitation under consideration in two ways. First, that the anvil 29, being shown and described as adjustable, may be so adjusted in the arm 27 that the spring 28 will hold the anvil in engagement with arm 30 on the rotor shaft in the normal position of the parts. Second, that the counts are not limited to a construction in which the spring of less tension shall hold the arms in engagement when the parts are stationary or in normal position. Thus, Kane points out that with the parts of his device adjusted as shown in the drawing when the rotor shaft has been rocked from normal position by rod 36, 62, and released, springs 31, 32, will return the rotor shaft to or beyond normal position in which position spring 28 which is of less tension than springs 31, 32, will operate on arm 27 to hold it or the anvil carried thereby in engagement with arm 30 on the rotor.

It seems to the law examiner that the position of Kane with respect to count 1 is correct. This count covers the Kane construction if the anvil 29 be adjusted in the arm 27 so as to bear on the arm 30 of the rotor shaft. The anvil was originally described as adjustable and is clearly adjustable to an extent sufficient to cause it to

contact with arm 30. Spring 28 tends to move arm 27 in a direction to cause engagement of the anvil with arm 30 and such engagement would be effected if anvil 29 were adjusted in the manner stated by Kane in the amendment to his specification under date of October 18, 1915. The adjustable anvil 29 of Kane corresponds to the screw 35 of Podlesak. Kane has shown his anvil adjusted so as to be normally out of contact with the arm on the rotor shaft, although obviously the anvil can be adjusted so as to be in engagement with the arm on the rotor. Podlesak shows the screw 35 adjusted so as to normally contact with arm 31 on the rotor, but clearly the screw could be so adjusted as to be out of contact with the arm. Two patents certainly ought not to issue showing a part having the same capabilities of adjustment and based on the distinction that one shows the part adjusted into one position, while the other shows the part adjusted into a different position. It should be noted that count 1 does not state that the electrodes are normally separated. However, it is apparent that Kane's anvil 29 can be so adjusted as to cause the electrodes to be normally separated.

The remaining counts with the exception of counts 3 and 6 contain limitations with respect to the relation and action of the springs generally similar to count 1. The holding of the law examiner with respect to the spring feature of these claims must be the same as that stated in the consideration of count 1.

Count 3 seems to read directly on the Kane device without qualification. The members 10 and 26 are the relatively fixed and movable electrodes, 27 is the arm on the movable electrode, while 30 is the arm on the rotor of the generator, and 35 is the trip finger. The push rod is 36, 62. 28 is a spring tending to hold the arm 27 in engagement with the arm 30 of the rotor, while the springs 31, 32, constitute spring means operatively connected with the rotor for holding it in a predetermined position. It seems clear that the Kane construction with the anvil adjusted as shown responds fully to count 3 since the count does not state that the spring actually holds the one arm in engagement with the other.

Count 6 so far as the spring acting on the arm of the movable electrode is concerned is limited in the same manner as count 3. So far as the spring feature is concerned Kane can make count 6 based on the adjustment of the anvil just as shown in his drawing and described in his original specification.

Counts 4 to 9, inclusive, include in addition to the limitation heretofore referred to, a bracket which is variously described in the counts as an integral bracket, a unitary bracket, an integral bracket having a body and shelf laterally extending laterally therefrom, a body and a supporting shelf or base extending laterally therefrom. In the Podlesak construction the limitations in question refer to the body 1 with the plate 5 from which extends laterally the shelf or base 8. It is Podlesak's contention that the parts 8, 14 and 15 of the Kane device do not fairly respond to the limitations in counts 4 to 9, inclusive, with respect to the integral or unitary bracket and the base or shelf on which certain parts are supported.

Obviously, the parts 8, 14 and 15 constitute an integral and unitary structure. They also support the parts of the apparatus as stated in the counts. There is no limitation in the counts as to the character of the shelf or base other than that it shall extend laterally from the body and shall support certain parts. It seems to the law examiner that the parts 14, 15, of Kane respond to the limitation to a laterally extending base or shelf in substantially the same sense as do the parts 5 and 8 in the Podlesak device. Further, it is thought that Kane's member 8 corresponds, so far as the counts state, fairly to member 1 of Podlesak which is understood to be the body of certain of the counts.

It must be held that Kane has a right to make claims corresponding to the counts and the motion for dissolution is accordingly denied.

E. S. Henry, Law Examiner. March 22, 1916.

Paper No. 34

Washington, D. C., March 24, 1916.

Before the Examiner of Interferences

In re Interference No. 39,181

PODLESAK

vs.

KANE

The law examiner having denied Podlesak's motion to dissolve, filed February 1, 1916, proceedings are resumed, and Podlesak, the junior party, having failed to show sufficient cause why judgment on the record should not be entered against him, pursuant to the order of December 17, 1915, priority of invention of the subject matter in issue is hereby rendered in favor of Edmund Joseph Kane, the senior party.

Limit of appeal: April 13, 1916.

H. E. Stauffer, Examiner of Interferences.

File No. 2449

Docket Room,
Apr. 5, 1916,
U. S. Patent Office.

Mail Room,
Apr. 5, 1916,
U. S. Patent Office.

Intf. No. 39,181, Paper No. 35

In the United States Patent Office

Interference No. 39,181

PODLESAK

vs.

KANE

APPEAL TO THE BOARD OF EXAMINERS IN CHIEF

To the Commissioner of Patents,

SIR: I hereby appeal to the Board of Examiners in Chief from the decision of the Examiner of Interferences in the above entitled case, dated March 24, 1916, in which priority of invention was awarded to Kane. The following are assigned as reasons for appeal:

(1) The Examiner erred in finding that Podlesak, the junior party, had failed to show sufficient cause why judgment on the record should not be entered against him.

(2) The Examiner erred in awarding priority to Kane on the claims of the issues.

(3) The Examiner erred in not finding that Podlesak was entitled to judgment of priority on the claims of the issues.

(4) The Examiner erred in deciding the Kane has a right to make the claims of the issues, and in entering judgment based thereon.

Signed at Washington, D. C., this 5th day of April, 1916.

Emil Podlesak, By Edward E. Clement, His Attorney.

Examiner-in-Chief,
Apr. 25, 1916.
U. S. Patent Office.

Appeal No. 9807, Paper No. 41

United States Patent Office

Before the Honorable Board of Examiners-in-Chief

Interference No. 39,181

EDMUND JOSEPH KANE

vs.

EMIL PODLESAK.

MOTION

And now comes the party Kane, by his attorneys, and moves that the Honorable Board of Examiners-in-Chief re-set for hearing on the earliest possible day the appeal by Podlesak from the judgment of the Examiner-of-Interferences awarding priority of invention to the party Kane, which appeal is now set for hearing by the Board of Examiners-in-Chief on May 26, 1916.

Brown, Nissen & Sprinkle, Attorneys for Kane.

Examiner-in-Chief,
Apr. 25, 1916.
U. S. Patent Office.

United States Patent Office

Before the Honorable Board of Examiners-in-Chief

Interference No. 39,181

EDMUND JOSEPH KANE

vs.

EMIL PODLESAK.

AFFIDAVIT OF LYNN A. WILLIAMS

STATE OF ILLINOIS,
County of Cook, ss:

Lynn A. Williams, being duly sworn, says:

I am, and for some years past have been, Counsel for The Webster Electric Company engaged at Racine, Wisconsin, in the manufacture and sale of ignition apparatus. The Webster Electric Company has

recently, by assignment, acquired the whole right, title, and interest to the Kane application involved in this interference, and also has certain rights in, to, and under the Podlesak reissue patent No. 13,878 involved in this interference, and also other Podlesak patents and applications, which rights were acquired by two written instruments executed February 5, 1914, and recorded respectively February 17, 1914, and September 20, 1915. The rights of the Webster Electric Company include the right to institute and maintain suit for infringement of patent No. 13,878 and said other patents and applications.

On or about September 4, 1915, Emil and Henry J. Podlesak, by an instrument in writing, attempted and purported to assign patent No. 13,878 and said other patents and applications to Splitdorf Electrical Company and Sumter Electrical Company, the plant of the Sumter Electrical Company at Sumter South Carolina, now being owned by Splitdorf Electrical Company and operated as its South Carolina works. Since said attempted and purported assignment Webster Electric Company and its Counsel have been refused and denied any authority to control or take any action in the Patent Office with respect to patent No. 13,878 or said other patents and applications.

This interference involves the Podlesak reissue patent previously referred to and a pending application of the party Kane. The issue of the interference consists of a number of the broader claims of the Podlesak reissue patent. Kane's application involved in this interference is divisional of an earlier Kane application filed on February 2, 1910. Podlesak in his preliminary statement alleged a date of conception subsequent to February 2, 1910, and was, therefore, required to show cause why judgment on the record should not be rendered against him. In an attempt to avoid judgment on the record Podlesak, on the last day of the time afforded by the rules as extended by stipulation, filed a Motion to Dissolve the interference upon three counts. The Examiner of Interferences and his Honor, Commissioner Ewing, denied to Podlesak the right to urge grounds 1 and 3 of his Motion to Dissolve. In due course the remaining ground of the Motion was argued before the Law Examiner and decided adversely to Podlesak. In accordance with the usual practice the jurisdiction of the interference was then re-assumed by the Examiner of Interferences and final judgment against Podlesak was rendered by the Examiner of Interferences. From this judgment Podlesak has taken an appeal to the Board of Examiners in Chief and we believe that it is the intent of Podlesak and the Splitdorf interests to prosecute a series of appeals pro forma or perfunctory in their nature and for the mere purpose of delaying the termination of this interference and the issue of a patent on the Kane application.

Webster Electric Company prior to the purported assignment to Splitdorf Electrical Company and Sumter Electrical Company instituted suit for infringement of its rights under patent No. 13,878 in interference against the Sumter Electrical Company in the United States District Court for the Eastern District of South Carolina in

which suit Emil and Henry J. Podlesak were co-plaintiffs. For divers reasons said suit was dismissed without prejudice on or about September 23, 1915.

In October 1915 Webster Electric Company instituted suit in the United States District Court for the Northern District of Illinois, Eastern Division, for infringement of said patent No. 13,878 and others against Splitdorf Electrical Company, Sumter Electrical Company, Henry J. Podlesak, and Emil Podlesak. Said suit is pending and ready for trial.

There is also pending and ready for trial in the United States District Court for the Eastern District of Michigan, a suit for infringement of said patent No. 13,878 in which the Webster Electric Company, Emil T. Podlesak, and Henry J. Podlesak are plaintiffs, and in which Alamo Manufacturing Company is defendant. Subsequent to said purported assignment of September 4, 1915, defendant brought a motion to have the Splitdorf Electrical Company and Sumter Electrical Company made parties plaintiff, or that the bill be dismissed, and extrajudicial the Splitdorf Electrical Company and the Sumter Electrical Company have demanded of the Webster Electric Company that it dismiss said suit.

Webster Electric Company, therefore, has pending two suits for infringement of its rights in, to, and under the Podlesak patent No. 13,878 in interference, which suits are ready for trial and may be set for hearing at any time. It also owns the Kane application in interference. It is impossible for Webster Electric Company to consistently proceed with the trial of said two suits if, as we believe the fact to be, Kane is ultimately to be awarded priority in this interference and a patent is issued on its Kane application. It is, therefore, essential that this interference be determined before said suits can proceed so that Webster Electric Company shall know whether the invention in issue in this interference is validly patentable to Kane or whether it is validly patented to Podlesak by patent 13,878 in, to, and under which Webster Electric Company is the owner of said certain rights including the right to institute and maintain suits for infringement.

It is obvious that Splitdorf Electrical Company and the Podlesak who are confederating together will have to actively defend the pending suit at Chicago if the Podlesak reissue patent is validated by an award of priority to Podlesak in this interference, whereas they will have to actively defend a suit to be instituted at once if Kane is awarded priority and his application issues as a patent. While this interference is unterminated the Webster Electric Company is practically unable to proceed against the infringement by Splitdorf Electrical Company, contributed to by the Podlesaks, because it does not know whether the invention being appropriated is an infringement of its rights under a valid patent to Podlesak or under a valid patent to be issued to Kane. As long as this uncertain state of affairs can be maintained Splitdorf Electrical Company and the Podlesaks will be able to defy Webster Electrical Company and we believe it is their unequitable purpose to maintain this uncertain

status by a series of appeals in this interference, taken with the primary intent and purpose of merely delaying the ultimate issuance of the Kane patent.

For these reasons Webster Electric Company and its Counsel believe that it is essential to its rights that the hearing of this appeal be advanced to as early a date as possible.

Lynn A. Williams.

Subscribed and sworn to before me this 22nd day of April, A. D. 1916.

Albert G. McCaleb, Notary Public. (Seal.)

Appeal No. 9807, Paper No. 43

J. R. S.

Appeal No. 9807

United States Patent Office

April 26, 1916.

Before the Examiners-in-Chief, on Appeal

In the Matter of the Interference Between the Reissue Patent of Emil Podlesak, Granted February 9, 1915, No. 13,878, on Application Filed December 23, 1914; Original Patent Granted March 4, 1913, No. 1,055,076, on Application Filed April 15, 1912, and the Application of Edmund J. Kane, Filed January 14, 1915, No. 2097, which is a Division of Application Filed February 2, 1910, Serial No. 541,428. Interference No. 39,181.

Improvement in Electric Lighters

Mr. H. R. Van Deventer and Messrs. Sturtevant & Mason, attorneys for Podlesak.

Messrs. Brown, Nissen & Sprinkle, attorneys for Kane.

The request for advancing the hearing in this case is denied.

T. G. Steward, Frank C. Skinner, Fairfax Bayard, Examiners-in-Chief.

Examiner-in-Chief,
U. S. Patent Office,
May 16, 1916.

Appeal No. 9807, Paper No. 46

BRIEF

In the United States Patent Office

Before the Board of Examiners-in-Chief

Interference No. 39,181.

EMIL PODLESAK

vs.

EDMUND JOSEPH KANE.

Electric Igniters

Hearing on Priority

BRIEF FOR EMIL PODLESAK

H. R. Van Deventer, Sturtevant & Mason, Attorneys.

In the United States Patent Office

Interference No. 39,181

PODLESAK

vs.

KANE.

Electric Igniters

Hearing on Priority

This case comes before your Honors on appeal by Podlesak, the senior party to this interference, from the decision of the Examiner of Interferences, awarding priority of invention to Kane.

Podlesak failed to overcome the filing date of the senior party, Kane, and was called upon to show cause why judgment of priority should not be rendered against him. Motion to dissolve was brought alleging that Kane, the senior party, had no right to make claims corresponding to the counts of the interference. This motion was duly heard by the Law Examiner who decided that Kane had a right to make the claims corresponding to the counts of the inter-

ference. The Examiner than awarded priority of invention to Kane and Podlesak has appealed from that decision.

The questions before your Honors are:

First. Whether or not Kane is not estopped from making claims corresponding to the counts of the interference by reason of his laches in presenting the claims in his application and provoking the interference.

Second. Whether or not Kane has actually disclosed in his application, as originally filed, subject-matter on which claims may be based, corresponding to the counts of the interference.

The question of whether there has an estoppel grown up against Kane's making claims corresponding to the counts of the interference will be first considered.

The records show the following facts:

Podlesak filed his application for patent April 15, 1912, and this resulted in the grant of a patent to him on March 4, 1913, No. 1,055,076. Count 1 of the present interference is identical with Claim 13 of the original Podlesak patent. Counts 2 and 3 of the present interference are substantially identical with Claims 14 and 15 of the original Podlesak patent. On December 23, 1914, an application for reissue of the Podlesak patent above referred to was filed and this resulted in the grant of a reissued patent to Podlesak, February 9, 1915, No. 13,878. It is significant that the attorney for Kane and the Webster Electric Company (assignee of Kane) in this case was the attorney for the Podlesak reissue application.

Counts 4 to 9 inclusive correspond, respectively, with Claims 19 to 24 inclusive of the Podlesak reissued patent.

Edmund J. Kane filed an application in the Patent Office February 2, 1910. On February 14, 1915, the application in this interference, Serial No. 2097, was filed and was alleged to be a division of this earlier application, filed February 2, 1910. Kane, in his divisional application, Serial No. 2097, as originally filed, did not present any claims to the subject-matter involved in this interference. Neither were there any claims presented at any time in the application filed February 2, 1910, which embraced the subject-matter forming the counts of this interference.

On April 17, 1915, Kane filed an amendment in his application, Serial No. 2097, presenting Claims 7 to 15 of the application, which claims are respectively the issues of the present interference. These claims were made for the first time by Kane in his application more than two years after the grant of the original letters patent to Podlesak, which was March 4, 1913.

The counts of the interference may be divided into two groups. Group 1 includes Counts 1, 2 and 3, which were substantially identical with Claims 13, 14 and 15 of the original Podlesak patent. Group 2 includes Counts 4 to 9, inclusive, which were introduced by the reissue of the Podlesak patent and are Claims 19 to 24, respectively, of said reissue patent. As to the first group of claims, Kane is in the attitude of having waited a period of more than two years after the grant of the Podlesak patent before laying claim to the invention covered by these counts of the interference as being

invention and asking for the interference with the Podlesak patent. Under the recent decisions of the Court of Appeals of the District of Columbia, in re Fritts (Patent Appeal No. 973) and Harold Rowntree vs. Harry M. Sloan (Patent Appeal No. 1007), an applicant for patent who has an application co-pending with a patent application and who waits a period of more than one year after the grant of the patent before copying claims from the patent and laying claim to the invention claimed as his invention, is estopped from making such claims through his own laches.

In the case of Rowntree vs. Sloan, Sloan filed an application in October of 1907, but waited until October 7, 1912, or three years after the grant of the patent to Rowntree before he copied claims from the Rowntree patent and requested an interference. The case was before the Court on the question of priority, it being urged on the part of Rowntree that Sloan had no foundation in his original disclosure for the subject-matter of the counts of the interference. The Court, speaking through Justice Robb, stated as follows:

"While in our opinion the view of the lower tribunal is correct, it is unnecessary to discuss the matter for the reason that Sloan's laches in failing within a reasonable time after the issue of the Rowntree patent to make these claims estopped him to make them at all. [In re Fritts, present term.] By his delay if his present contention should be accepted the life of the monopoly would be extended for a period of three years. If he thought these claims read upon his application it was his duty promptly to make them at least within the time allowed for amendment after Office action, and his failure to do so is fatal to his present contention."

It is believed that the present case is on all fours with this decision of the Court of Appeals, and that Kane was in duty bound to promptly make the claims of the Podlesak patent as originally granted if he thought he was entitled to make these claims, and for his failure to do so for a period of over two years he is now estopped by his own laches from claiming this patented invention as his own.

The mere fact that Podlesak applied for a reissue would not seem to change the status, at least as to Counts 1, 2 and 3, which are substantially identical with Claims 13, 14 and 15, respectively, of the original Podlesak patent granted March 4, 1913. The reasoning of the Court in the Rowntree vs. Sloan decision was based in part on the fact that to allow Sloan to copy claims from a patent after it has been running for a period of three years would extend the life of the monopoly. In other words, Rowntree had enjoyed a monopoly of the invention set forth in the counts of the interference for a period of three years, and then to grant a patent to Sloan for a period of seventeen years would extend the patent monopoly on that invention to a period of more than twenty years, thus keeping the invention away from the public for a longer period than provided by the statute. The reissue application of Podlesak does not in any way extend the life of the Podlesak patent. The seventeen years runs only from the date of the grant of the original letters patent and,

therefore, it is not seen how the mere grant of the reissue patent to Podlesak in any way changes the conditions. If Kane be granted a patent containing the counts of this interference, the patent monopoly will be extended.

It is believed that your Honors will find that the grant of the reissue does not in any way change the status of Counts 1, 2 and 3, and that Kane is estopped from making the claims corresponding to these counts, and, therefore, the decision of the Examiner awarding priority of invention to Kane should be reversed.

Taking up now Counts 4 to 9, inclusive, it is believed as to these counts that Kane is equally estopped from making claims corresponding to said counts of the interference, by reason of his laches in failing to present claims to the subject-matter involved in these counts for a period of more than two years after the grant of the original Podlesak patent.

In order to determine whether or not the subject-matter of Counts 4 to 9, inclusive, was present and claimed in the original letters patent granted to Podlesak, it will be necessary to consider briefly just what these counts are directed to. It is not thought necessary to copy all the counts, and Count 5 (Claim 20 of reissue) will be taken as an example and reads as follows:

"20. The combination of an igniter having relatively fixed and movable electrodes, an arm on the movable electrode, a generator having a rotor, an arm connected therewith, spring means tending to hold the rotor in a given position, spring means of less tension than the first-mentioned means operating on the first-mentioned arm to hold the same in engagement with the second-mentioned arm, means on one of said arms for adjusting the relation of the arms and, therefore, the relation of the position of the movable electrode in the rotor, a unitary bracket comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the said generator is mounted, and a trip device for actuating the rotor."

In the Podlesak patent there is a fixed electrode 3 and a movable electrode 4. The movable electrode is mounted in or connected to an arm 32. A generator indicated at C is provided with a rotor indicated at 20. An arm 31 is connected to the rotor. Spring means 23 holds the rotor in given position and spring means 33 operates on the first-mentioned arm to hold the same in engagement with the second mentioned arm. A screw 35 adjusts the relation of the arms 31 and 32 and the relative position of the movable electrode to the rotor. A unitary bracket indicated at 8 is formed with a body portion which passes through the opening 2 in the cylinder head and carries the movable electrodes; said unitary bracket is also provided with a shelf extending laterally therefrom and formed integral therewith, upon which the generator is mounted. Co-operating with the above parts is a trip device which actuates the rotor.

The essential feature of the above count, when it is considered in the light of the prior art, is the unitary bracket structure having

the integral body portion for the electrodes and the integral shelf on which the generator is mounted. This feature runs through each of the Counts 4 to 9, inclusive, which are, respectively, Claims 19 to 24 of the patent. Claim 19, which is count 4, calls for an "integral bracket upon which all the aforesaid mechanism is mounted" and the aforesaid mechanism includes the generator and the electrodes. Claim 22, Count 7 of the interference, includes the supporting shelf or base, which extends laterally from the body portion carrying the electrodes and which is formed integral therewith, and on which shelf the generator is mounted. Claim 23, Count 8 of the interference, includes likewise the body, the supporting base which extends laterally therefrom and is formed integral therewith, on which base the generator is mounted. Claim 24, which is Count 9 of the interference, includes the body and a laterally extending base on which the generator and rotor are mounted. Thus it will be noted that through each one of the Counts 4 to 9, inclusive, this integral bracket and body structure, the body supporting the electrodes and the bracket supporting the generator, runs as a limitation.

Claims 16 and 17 of the original Podlesak patent include an igniter frame comprising a body, a supporting base and an arm extending laterally therefrom. They also define the sparking electrodes as mounted in said body and the motor generator as mounted on said base. Claim 18 of the original Podlesak patent also includes an igniter frame comprising a body and a shelf extending therefrom and supporting the generator, the electrodes being mounted in the body and the generator being mounted on the shelf. It will, therefore, be very apparent that Claims 16, 17 and 18 of the original Podlesak patent are directed to the same subject-matter as Claims 19 to 24 of the reissue Podlesak patent.

Upon the issue of the original Podlesak patent Kane had constructive knowledge that Podlesak was claiming as his invention this integral bracket structure or igniter frame which comprised a body for supporting the electrodes and the shelf on which the generator was mounted and Kane should, therefore, within a reasonable time have made claims to this subject-matter as being his invention. His failure to do so for a period of more than two years, under the decisions of the Court of Appeals referred to above, amounted to an estoppel, and Kane should not now be permitted, in view of his own laches, to make claim to the subject-matter contained in Counts 4 to 9, inclusive, of the interference.

For the above reasons it is believed your Honors should find that Kane is not entitled to make any of the counts of the interference and that the decision of the Examiner of Interferences should be reversed and priority of invention awarded to Podlesak.

It happens that in this case there are certain relations between the parties which affect the equities of the situation, and which should have more or less bearing in dealing with this question of estoppel against Kane which has been raised, and also as to his technical right to make the claims. Furthermore, these equities are of such a nature that it may seem advisable to your Honors to

suspend this entire proceeding until the equities are determined in a court proceeding which is now pending before the United States District Court for the Seventh Circuit.

The Kane application was, on May 24, 1915, placed in interference with the patent to one Milton, No. 1,096,048, dated May 12, 1914, which interference is now pending and is, we understand, as yet undecided by the Patent Office. In the present interference the Patent Office has ruled that, if the Kane-Milton interference be finally decided in favor of Milton, any decision in favor of Kane as against Podlesak in this present interference on the question of priority shall be set aside. During the proceedings in the present interference, and after the Milton-Kane interference was declared, and while the attorneys for Kane were seeking to have his application placed in interference with the present Podlesak reissue patent, one of the grounds for the hastening of the interference between Kane and Podlesak and delaying the Milton-Kane interference was that the parties owning the Milton and Podlesak patents were identical, viz: The Webster Electric Company, that is, at that time the point was made by Kane that he as a single party was conducting, or about to conduct, a contest in two different interferences against two parties whose interests were identical, the Milton patent being actually owned by the Webster Electric Company and the Podlesak patent being jointly controlled by the Webster Electric Company and the Splitdorf Electrical Company, the former being licensees. It happens that on May 4, 1916, there was filed for record in the United States Patent Office an assignment, dated April 20, 1916, transferring the whole right, title and interest in the Kane application to the Webster Electric Company. It therefore appears that the Milton-Kane interference is now being conducted in the interests of a single owner, and that the Kane-Podlesak interference is now, as to one party, Kane, being conducted by the Webster Electric Company, which is a licensee under the Podlesak patent.

We think it will not be denied that at the time Kane made the invention of his application he was employed by the Webster Electric Company, and that at the time Podlesak filed his application he, Kane, knew what Podlesak claimed to have invented, and also knew when the Podlesak patent was issued, and that having failed then to assert his rights as against Podlesak, he should not now be allowed, three years after the grant of the Podlesak patent, and nearly six years after his (Kane's) original application was filed, to put in claims which would conflict with and take away the value of the Podlesak patent. This is particularly inequitable in this case because he has assigned all his rights, title and interest to the Webster Electric Company, which owns the Milton application and is a licensee under the Podlesak patent.

Every doubt should be resolved against Kane in this manifest attempt of the Webster Electric Company to destroy the property (the Podlesak patent) under which they are licensees; under whose protection they have worked for several years, and under which

they have paid and are now paying royalties. It hardly seems that the Webster Electric Company would have paid these royalties to Podlesak, their former employee, unless they considered him to be the true inventor of the invention shown and claimed in the Podlesak reissue patent. Certainly the doctrine of estoppel in the recent Court of Appeals cases above referred to should be evoked most strenuously against the Webster Electrical Company, for it has shared in the monopoly of the Podlesak patent for a term of years and now seeks to destroy the Podlesak monopoly and give to itself a full monopoly for a period of seventeen years or longer.

As to Counts 1, 2 and 3, Kane is so clearly estopped by his own laches from making these counts that it is not thought necessary to discuss the question of whether there is a foundation in the Kane application for the subject-matter of these counts. It is believed that Kane is just as clearly estopped by his own laches from making Counts 4 to 9, inclusive. If, however, your Honors should find that the estoppel does not extend to these counts of the interference, then it is respectfully requested that Kane's original disclosure be considered with reference to whether or not there is a proper foundation in this disclosure for the subject-matter of these counts of the interference.

Counts 4 to 9, inclusive, of the interference were copied from Podlesak reissue patent No. 13,878 and, under the well-settled practice of the Office, these claims should be construed in the light of the disclosure of the patent. Where both parties to an interference are applicants, then the claims are in the process of being formed for patenting, and may be amended or changed. Under such conditions it is possible that the claim should be given the broadest possible interpretation that language will permit. When, however, the counts of an interference are copied from a patent, then the situation is entirely different. The claims forming the counts of the interference are no longer going through the process of being formed, but have been determined and can not be changed. Under these conditions it is believed that the claims which have been copied from the patent should be construed in just the same manner as the patent will be construed by a court to determine first what is the invention covered by the claims of the patent, and after this has been determined then it should be considered whether or not the applicant involved in the interference has disclosed the invention found to be covered by the patent. In the case of Funk & Mickle vs. Whitly, 114 O. G., 971, it was stated:

"Where an applicant copies the claims of a patent for the purpose of provoking an interference * * * if there is any doubt as to the meaning of the issue it shall be construed in the light of the disclosure of the patent."

Podlesak devised an igniter mounting for internal combustion engines. One of the purposes of this mounting is clearly set forth in the description of the patent beginning with line 46 on page 1, as follows:

"As the igniter and generator must be removed from time to time for cleaning the electrodes and other reasons, it is of great importance that the igniter and generator be replaced in exactly the same position it was before removal; otherwise, the push rod will not be disposed in proper relation to the trip finger of the rotor to accomplish satisfactory results in the operation of the engine, generator and igniter."

In order to accomplish this purpose Podlesak provided a body portion 1, which passed through an opening in the cylinder head, and in this body portion he mounted both the fixed electrode and the movable electrode. In order to provide a support for the generator which would permit it to be quickly removed and again returned and placed in exactly the same position, Podlesak provided the following structure:

"The outer end of the igniter body is formed with a rhomboidal plate 5 which, as shown in Fig. 1, has bolt receiving openings 6 that are slightly larger in diameter than the fastening bolts or studs 7 that pass through the openings and are fastened to the cylinder head A. * * * Extending from the plate portion 5 of the igniter body is a shelf or bracket A, which forms a base to which the generator C is removably secured by stud bolts 9." (Lines 7 to 26 of page 2.)

The patentee describes the generator C as follows:

"The generator comprises permanent horseshoe magnets 17 fastened to E-shaped pole pieces 18, on the middle projections of which are generating coils 19. In the present drawings only one pole piece and coil is shown in Fig. 1, the other corresponding parts being concealed from view. Between the pole pieces oscillates a cruciform rotor 20 mounted on a shaft 21, which has at one end oppositely disposed crank arms 22 which are connected with springs 23 that assume an alining position through the axis of the rotor when the latter is idle, the outer ends of the springs being fastened to studs 24 on the generator frame. On the opposite end of the rotor shaft is a strip finger 25, which is adapted to have a wiping engagement with a push rod 26 or other equivalent actuator, which rod has its end opposite from the trip finger connected with the crank pin 27 of the rotating shaft 16."

(Lines 56 to 77, page 2.)

From the above quoted description it will be apparent that one of the essential features of the Podlesak construction consists of the body portion in which the electrodes are mounted, which body portion is provided with a plate having extending therefrom a shelf or bracket 8, on which this generator C is removably secured. Means is also provided for fixing the body portion B and the plate 5 in definite relation to the cylinder, so that the generator and igniter as a whole may be removed and again replaced in exactly the same position as before removal. Also by taking out the stud bolts 9 the ge-

or may be removed from the shelf, and when again placed on shelf there is no possible chance of changing its angular position ive to the push rod, as the shelf is held in fixed position relative e push rod, and when the generator is again placed on the shelf ill be replaced in this same fixed position as before removal. he patentee clearly describes just what his generator consists of, it includes not only the pole pieces, but also the rotor, the shaft ch supports the same, and the trip finger which is engaged by push rod. When the generator is removed from the shelf it is oved as a whole and another generator can be placed on the shelf, it will be set in proper position so that the timing will not be in way disturbed.

laims 19 to 24, inclusive, define in more or less general terms the erator and the fixed and movable electrodes. The especially el feature running through each of these claims is this mounting the electrode and generator, which has been referred to above. im 19 of the patent, which is Count 4 of the interference, includes n element "an integral bracket upon and in which all the afore- l mechanism is mounted." The aforesaid mechanism referred to he fixed and movable electrodes and the generator which has a or, an arm connected therewith, springs tending to hold the rotor given position, spring means of less tension operating on the arm nected to the movable electrode to hold the same in engagement h the arm on the rotor.

laim 20, which is Count 5 of the interference, also describes more less generally the fixed and movable electrodes and the generator l includes as the novel element "a unitary bracket comprising a ly in which the fixed and movable electrodes are mounted and a lf extending laterally therefrom and integral therewith upon ich the generator is mounted."

laims 21, 22, 23 and 24 of the Podlesak patent, which are, re- ctively, Counts 6, 7, 8 and 9, each include more or less specifically s integral bracket, having a body in which the electrodes are unted and a shelf or base on which the generator is mounted.

It is not thought necessary to go at length into the prior art to de- mine the real scope and meaning of Claims 19 to 24, inclusive, of e Podlesak patent. A brief reference, however, to the patent to eber, No. 820,535, granted May 15, 1906, will clearly show your nors that the idea of fixed and movable electrodes, a generator ving a rotor, an arm connected with the rotor, spring means tend- g to hold the rotor in a given position, spring means operating on e arm carrying movable electrode to hold the same within range the arm carried by the rotor, together with a trip device for actuat- g the rotor, were all well known long prior to the Podlesak in- ntion. The essentially novel feature in the counts of the inter- rence, in view of this Weber patent, is this bracket construction for pporting the electrodes and the generator so that the generator ay be removed as a whole and replaced in the same position as fore it was removed and so that the entire igniter supporting frame, ith the generator and electrodes, may be removed and replaced as sired.

With this understanding of the Podlesak invention, as set forth in the claims corresponding to the counts of this interference, the application of Kane will now be considered.

As has been noted above, Kane's application involved in the interference is alleged to be a division of an application, Serial No. 541,428, filed February 2, 1910, and it is by reason of this early date of this parent application that Kane is awarded priority of invention. If there is no foundation in this parent application, filed February 2, 1910, for the subject-matter forming the counts of the present interference, then the decision of the Examiner of Interferences should be reversed and priority of invention should be awarded to Podlesak.

Kane, in his original application, stated:

"The engine cylinder is provided with the usual side opening adapted to receive the usual igniter block 8."

(Page 2, lines 23 to 26.)

"Secured to the igniter block 8 and preferably cast integral therewith is an arm 14 extending for a short distance approximately parallel with the outer wall of the cylinder 1 and provided at its forward extremity with the angular bearing portion 15, into which the shaft 16, on which is carried the armature or inductor, is journaled."

Page 3, lines 7 to 12.

Page 4, beginning with line 6, it is stated that:

"there is a supporting block 25 in contact with the sleeve 15 and secured thereto by a set screw 25a."

This is Kane's entire disclosure, as to means for supporting the fixed and movable electrodes and the generator.

From this disclosure it is apparent that the angular bearing portion 15 is the journal bearing for the shaft 16, on which is carried the armature or inductor. In other words, the angular bearing portion 15 is a part of the generator, the shaft of the generator being journaled in said bearing. It is nowhere stated that by removing the set screw 25a the field portion of the generator may be removed from the sleeve 15, but, even admitting that it could be, the only way in which the generator may be removed from the igniter block 8 is by taking it to pieces. Let us suppose that, for some reason or other, the generator has to be changed. The entire mounting, including the igniter block and the bearing portion 15 would have to be renewed, as this bearing portion 15 is the journal for the armature or inductor shaft. There is certainly no disclosure in the original Kane application of any unitary bracket "comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith, upon which the generator is mounted." This shelf of the Podlesak patent forms a supporting base on which the generator as a whole is mounted and from which it may be removed as a unit and again replaced in exactly the same position as it was before removal. Neither the shelf structure nor the equivalent thereof is disclosed by Kane. The sleeve 15 is a part of the generator in the Kane structure, as above noted.

Where, then, in Kane is the equivalent of the shelf on which the generator, as a unit, is removably mounted?

Figure 4 of the drawings of the Podlesok patent illustrates very clearly the trouble which follows the defective positioning of the igniter. Any shifting of the generator relative to the push-rod bodily or angularly is undesirable and leads to inefficiency. Podlesak, by his integral bracket structure and supporting shelf insures that the generator shall be maintained in proper position relative to the push-rod, even though it be removed and replaced or another generator substituted therefor. The Kane parent application does not disclose either in its description or in its drawings a bracket structure such as defined in the description in the Podlesak patent and set forth in the claims corresponding to Counts 4 to 9, inclusive, of the interference.

The divisional application as originally filed, forms no better foundation for the subject-matter of the counts of this interference. The divisional application was amended to state as follows:

"Pole pieces 20 and 21 are carried on supporting block 25, which is secured by set screw 25ª to the bearing member or bracket on or in which the magneto generator is mounted, thus rendering the magneto generator proper detachable from its firm supporting base, shelf or bracket formed integrally with ignition block or plug 8, as described."

This amendment imports into the specification of the Kane application terms somewhat similar to those used in the claims of the Podlesak patent forming the counts of the present interference. There was, however, no suggestion whatever in the parent application of Kane that the generator proper was carried by a shelf or bracket formed integral with the igniter block and detachable therefrom. Furthermore, these terms as applied to Kane's disclosure have no meaning. Kane has not pointed out by a reference letter what he considers to be his supporting base, shelf or bracket. If he has reference by these terms to the angular portion 15, then the description is inaccurate in its statement that the magneto generator proper is detachable from its supporting base, shelf or bracket 15. This angular portion 15 is a part of the generator and is described as the bearing for the armature shaft. If the igniter block 8 is considered the supporting base, shelf or bracket, then the magneto proper is not detachable from this member. It is perfectly apparent from a cursory consideration of those terms imported into the description by amendment that they have no meaning whatever as applied to the Kane disclosure, and certainly they do not define the invention which Podlesak has described and claimed in his patent.

The Law Examiner is considering the counts of the interference held that the parts 8, 14 and 15 of Kane constitute an integral and unitary structure and they also support the parts of the apparatus as stated in the counts. The Law Examiner further states there is no limitation in the counts as to the character of the shelf or base other than it shall extend laterally from the body and shall support certain parts. It is believed in the first place that the Law Examiner was in error in his interpretation of the claims of the Podlesak patent. In

the light of the description of the patent to Podlesak the shelf base has a certain function. It is so constructed that the genera may be mounted upon the same. To find the equivalent of the sh or base described and claimed by Podlesak it is believed your Hon must find in the Kane disclosure a structure on which the genera as a unit may be mounted and from which it may be detached a another generator substituted therefor. It is furthermore belie that your Honors should find a support of such a character that itself it shall be the equivalent of a shelf or base on which the gene tor may be placed and upon which it will rest. There is no supp in the Kane disclosure on which the generator as a unit is moun and from which it may be detached. The member 15 as pointed above is a part of the generator. It is the bearing for the armat shaft. But even if your Honors should consider that this bearing is the support for the generator, still it is not a shelf or a base on whi the generator may be mounted. In other words, in the Podles patent there is a flat shelf or base on which the generator as a u is placed and which determines the position of the generator relati to the trip device. According to the description of the Kane devi the support 25 is secured to the part 15 by a set screw 25^a. The is nothing to prevent the turning of this support 25 angularly abo the sleeve. In other words, there is nothing to bring about the fix position of the generator supported by the shelf or base as in t Podlesak invention.

It is not thought necessary to discuss in detail each of the Clai 19 to 24 of the Podlesak patent forming Counts 4 to 9 of the prese interference, as this same limiting feature which has been discuss above runs through all these counts.

It is believed your Honors will find that irrespective of the qu tion of Kane being estopped from making the counts of the interfe ence by his laches, that there is no foundation in the Kane applic tion as originally filed, or even as amended, for claims defining th invention claimed in the Podlesak patent.

For reasons above stated, it is respectfully urged that the Exam iner of Interferences should not have awarded priority of inventio to Kane, as he has no right to make claims corresponding to any on of the counts of the present interference, and, therefore, the decisio of record should be reversed and priority of invention should h awarded to Podlesak.

Respectfully submitted,

H. R. Van Deventer, Sturtevant & Mason
Attorneys for Podlesak. May 15, 1916

Appeal No. 9807, Paper No. 48

DECISION

Hearing May 26, 1916. J. R. S.

Appeal No. 9807

United States Patent Office, Jan. 15, 1917.

Before the Examiners-in-Chief, on Appeal

In the Matter of the Interference Between the Reissue Patent of Emil Podlesak, Granted February 9, 1915, No. 13,878, on Application Filed December 23, 1914; Original Patent Granted March 4, 1913, No. 1,055,076, on Application Filed April 15, 1912, and the Application of Edmund J. Kane, Filed January 14, 1915, No. 2097, which is a Division of Application Filed February 2, 1910, Serial No. 541,428. Interference No. 39,181.

Improvement in Electric Lighters

Mr. H. R. Van Deventer and Messrs. Sturtevant & Mason, attorneys for Podlesak.

Messrs. Brown, Nissen & Sprinkle, attorneys for Kane.

This is an appeal by the party Podlesak from a decision of the examiner of interferences awarding priority of invention to the senior party, Kane, on the record.

No testimony has been taken by either party.

The grounds of the appeal are only generally stated. The contentions of Podlesak are (1) that Kane is estopped from making claims corresponding to the counts of the interference by reason of his laches in presenting the claims in his application and provoking the interferences, and (2) that Kane did not disclose in his application, as originally filed, the subject-matter on which claims may be based corresponding to the counts of the interference.

It is not necessary to pass upon the second point since, in view of our opinion regarding the first ground hereinafter expressed, it is immaterial whether or not Kane is entitled to make the claims which are involved in the interference.

Kane's application was filed on February 2, 1910, but he did not present claims for the interfering matter or seek an interference with Podlesak until some years thereafter. Podlesak filed his application on April 15, 1912, and a patent was granted thereon (#1,055,076) March 4, 1913. Claims 13, 14, and 15 of this patent are respectively, counts 1, 2, and 3 of the present issue. Podlesak applied for a reissue on December 23, 1914, and the reissue patent involved in this interference was granted on February 9, 1915. Claims 19 to 24, inclusive, of this reissue patent are counts 4 to 9, inclusive, of this interference. Kane filed his interfering application on January 14,

1915, and this is alleged to be a division of his above mentioned earlier application of February 2, 1910. The claims corresponding to the nine counts of the issue were filed on April 17, 1915.

It is contended on behalf of Podlesak that the case falls within the doctrine laid down in the case of Rowntree vs. Sloan, 227 O. G. 744, and we agree with this contention.

Claims 13, 14, and 15 of the Podlesak patent, #1,055,076, are directed to the same subject matter as claims 19 to 24, inclusive, of the reissue patent, and it is therefore clear that Kane, as early as March 4, 1913, had notice that Podlesak was claiming to be and had been recognized as the inventor of this subject matter. Notwithstanding this knowledge of Podlesak's status in this regard he did not, until April 17, 1915, take any step in denial of Podlesak's right to a monopoly.

In view of these considerations we reverse the decision of the examiner of interferences and award priority of invention to Emil Podlesak, the junor party.

Limit of appeal: February 5, 1917.

T. G. Steward, Frank C. Skinner, Fairfax Bayard, Examiners-in-Chief.

Docket Clerk,
Feb. 5, 1917.
U. S. Patent Office.

$20, C'k, Rec'd Feb. 5, 1917. A. C. C., U. S. Pat. Office

Intf. No. 39,181, Paper No. 50

United States Patent Office

In Interference No. 39,181

EMIL PODLESAK

v.

EDMUND JOSEPH KANE.

APPEAL TO THE HONORABLE COMMISSIONER OF PATENTS FROM THE BOARD OF EXAMINERS-IN-CHIEF

Honorable Commissioner of Patents, Washington, D. C.

SIR: I hereby appeal to you in person from the decision of the Examiners-in-Chief rendered January 15, 1917, in the interference between my application for Letters Patent for an improvement in Electric Igniters and the reissue patent of Emil Podlesak, in which priority of invention was awarded to the said Emil Podlesak. The following are assigned as reasons of appeal:

1. That the Examiners-in-Chief erred in awarding priority, as to counts 4 to 9 inclusive, to the junior party, Emil Podlesak.

2. That the Examiners-in-Chief erred in not awarding priority, as to counts 4 to 9 inclusive, to the senior party, Edmund Joseph Kane.

3. That the Examiners-in-Chief erred in holding that "Claims 13, 14, and 15 of the Podlesak patent, #1,055,076, are directed to the same subject matter as claims 19 to 24, inclusive, of the reissue patent."

4. That the Examiners-in-Chief erred in finding that Kane as early as March 4, 1913, had notice that Podlesak was claiming to be and had been recognized as the inventor of the subject matter of counts 4 to 9 inclusive.

5. That the Examiners-in-Chief erred in not finding that prior to the grant of the Podlesak reissue patent Kane had no knowledge that Podlesak was claiming to be the inventor of the subject matter of counts 4 to 9 inclusive.

6. That the Examiners-in-Chief erred in holding the doctrine laid down in Rowntree vs. Sloan, 227 O. G. 744, to be applicable to the case at bar.

A check for $20.00 in payment of the necessary fee is sent herewith.

Respectfully,

Edmund Joseph Kane, By Williams & Bradbury, Attorneys. Chicago, Illinois, February 3, 1917.

Docket Clerk,
Mar. 10, 1917,
U. S. Patent Office.

Intf. No. 39,181, Paper No. 53

In the United States Patent Office

Before the Honorable Commissioner of Patents

Interference No. 39,181

EMIL PODLESAK

vs.

EDMUND JOSEPH KANE.

Electric Igniters

Hearing on Priority

BRIEF FOR EMIL PODLESAK

H. R. Van Deventer, Sturtevant & Mason, Attorneys.

In the United States Patent Office

Interference No. 39,181

PODLESAK

vs.

KANE.

Hearing on Priority

BRIEF FOR PODLESAK

This case comes before your Honor on appeal by Kane from the decision of the Examiners-in-Chief awarding priority of invention to Podlesak, the junior party to this interference. The history of this interference briefly is as follows:

Podlesak failed to overcome the filing date of the senior party, Kane, and was called upon to show cause why judgment of priority should not be rendered against him. Motion to dissolve was brought alleging that Kane, the senior party, had no right to make claims corresponding to the counts of the interference. This motion was duly heard by the Law Examiner, who decided that Kane had a right to make the claims corresponding to the counts of the interference. The Examiner of Interferences then awarded priority of invention to Kane.

An appeal was taken from the decision of the Examiner of Interferences, and after due hearing the Examiners-in-Chief reversed the decision of the Examiner of Interferences and awarded priority of invention to Emil Podlesak. There were two reasons urged before the Board of Examiners-in-Chief as to why Podlesak should be awarded priority of invention. In the first place, it was urged that Kane was estopped from making the claims corresponding to the counts of the interference by reason of his laches in presenting the claims in his application and provoking the interference with Podlesak, who is a patentee. In the second place, it was urged that Kane had not disclosed in his application subject-matter on which claims corresponding to the counts of the interference could be based. The Examiners-in-Chief in their decision have treated only the question of laches and reached the conclusion that this case came within the doctrine laid down in the case of Rowntree vs. Sloan, 227 O. G., 744, and for this reason awarded priority of invention to Podlesak as to all the counts of the interference.

Appeal was taken by Kane from this decision of the Examiners-in-Chief as to counts 4 to 9, inclusive, only and, therefore, the decision of the Examiners-in-Chief as to counts 1, 2 and 3 has become final, and judgment as to priority of invention of these counts and the subject-matter covered thereby has been determined in favor of Podlesak.

Podlesak is a patentee. A patent was granted to him on March 4, 1913, No. 1,055,076. This patent was surrendered and an application for reissue thereof was filed on December 23, 1914. This reissue application resulted in the grant of a reissue patent to Podlesak February 9, 1915, No. 13,878. The present interference is between the application of Kane and this reissue patent of Podlesak No. 13,878.

Count 1 of the present interference is identical with claim 13 of the original Podlesak patent and is also claim 13 of the reissue Podlesak patent; counts 2 and 3 of the present interference are substantially identical with claims 14 and 15 of the original Podlesak patent and are claims 14 and 15 of the Podlesak reissue patent; and counts 4 to 9, inclusive, correspond respectively with claims 19 to 24, inclusive, of the Podlesak reissue patent.

Edmund J. Kane filed an application in the Patent Office February 2, 1910. On February 14, 1915, the application in this interference, Serial No. 2,097, was filed and was alleged to be a division of this earlier application, filed February 2, 1910. Kane, in his divisional application, Serial No. 2,097, as originally filed, did not present any claims to the subject-matter involved in this interference. Neither were there any claims presented at any time in the application filed February 2, 1910, which embraced the subject-matter forming the counts of this interference.

On April 17, 1915, Kane filed an amendment in his application, Serial No. 2,097, presenting Claims 7 to 15 of the application, which claims are respectively the issues of the present interference. These claims were made for the first time by Kane in his application more

than two years after the grant of the original letters patent to Po
sak, which was March 4, 1913.

The counts of the interference may be divided into two grou
Group 1 includes Counts 1, 2 and 3, which were substantially id
tical with Claims 13, 14 and 15 of the original Podlesak pate
Group 2 includes Counts 4 to 9, inclusive, which were introduced
the reissue of the Podlesak patent and are Claims 19 to 24, respe
ively, of said reissue patent. As to the first group of claims, K
is in the attitude of having waited a period of more than two ye
after the grant of the Podlesak patent before laying claim to
invention covered by these counts of the interference as being
invention and asking for the interference with the Podlesak pate

The Examiners-in-Chief in their decision reached the conclus
that claims 13, 14 and 15 of the Podlesak patent No. 1,055,676
directed to the same subject-matter as claims 19 to 24, inclusive,
the reissue patent. They also held that Kane, as early as March
1913, had notice that Podlesak was claiming to be and had been r
ognized as the inventor of this subject-matter and his delay, exte
ing over a period of more than two years before he made the clai
in his application and took any step in denial of Podlesak's right
his patent monopoly, estopped him from making claim to this s
ject-matter as his invention under the doctrine laid down in the c
of Rowntree vs. Sloan. For the above reason priority of invent
was awarded to Podlesak.

As above noted, this appeal is only as to Counts 4 to 9, inclusi
In other words, Kane evidently admits that he is estopped fr
making Counts 1 to 3, inclusive, under the doctrine referred to, b
urges that this doctrine does not apply as to Counts 4 to 9, inclusi
as they are directed to a different invention. Kane in his brief sta
that he has dropped Counts 1 to 3, inclusive, "because said clai
are, and always were, invalid." This is purly Kane's judgment
to Claims 1 to 3, inclusive, influenced largely by the fact that h
(Kane) cannot succeed as to the subject matter contained in the
claims. Kane's judgment is not ruling. No court has passed
the validity of these claims of the Podlesak patent, and they stan
as defining an invention belonging to Podlesak.

The reasoning of the Court in the Rowntree vs. Sloan decision w
based in part on the fact that to allow Sloan to copy a claim from
patent after it has been running for a period of three years woul
extend the life of the monopoly. In other words, Rowntree had e
joyed a monopoly of the invention set forth in his patent for a perio
of three years, and then to grant a patent to Sloan for a period o
seventeen years would extend the patent protection to a period o
more than twenty years, thus keeping the invention away from th
public for a longer period than provided by the Statute.

The reissue patent of Podlesak does not in any way extend the
life of the original Podlesak patent. The seventeen years runs only
from the date of the grant of the original Letters-Patent. The grant
of the reissue patent to Podlesak does not in any way change con
ditions. If Kane be granted a patent containing any of the counts
of this interference, the patent monopoly on the invention described

Podlesak will be extended over two years beyond the period provided by the Statute. Under the Rowntree vs. Sloan doctrine, Kane is estopped from laying claim in April of 1915 [when he provoked the present interference] to the invention which is shown, described and claimed in the original Podlesak patent.

It is well established that a reissue patent must be for the same invention as that set forth in the patent sought to be reissued. Your Honor will find that these conditions exist in the present instance. The difference between Counts 4 to 9, inclusive, and Counts 1 to 3, inclusive, is purely one of scope of claims. As a matter of fact, Count 4 includes every element in Count 1 with the added element of the integral bracket; Count 5 includes every element of Count 2 with the added element of the integral bracket, and likewise Count 6 contains every element of Count 3 with the added element of the integral bracket. This integral bracket is the igniter frame which supports the generator and the parts of the igniter. That this igniter frame is also part of the Podlesak invention as claimed in his original Letters-Patent is clear from an inspection of the claims. Claim 16, for example reads as follows:

"The combination of an igniter frame comprising a body, a supporting base, an arm extending laterally therefrom, with an internal combustion motor, sparking electrodes mounted in said body, a magneto generator mounted in said base, means for actuating said generator to generate current, means for actuating one of the electrodes, and means relatively fixed on said motor for engaging said laterally extending arm.

If this interference as to Counts 4 to 9, inclusive, be decided in favor of Kane, the public would not be entitled to make the invention described and claimed in the Podlesak patent when said Podlesak patent expires. Upon the issue of the original Podlesak patent, Kane had constructive knowledge that Podlesak was claiming as his invention this integral bracket structure or igniter frame which comprised a body for supporting the electrodes and shelf on which the generator is mounted, and Kane should have made, therefore, within a reasonable time claim to this subject-matter as being his invention. Particularly is this true when it is considered that Kane eventually did copy a claim, word for word, as contained in the original Podlesak patent for provoking this present interference.

For the above reason it is believed your Honor will find that Kane is not entitled to make Counts 4 to 9, inclusive, of the interference, and that the decision of the Examiners-in-Chief is correct and should be sustained.

It happens that in this case there are certain relations between the parties which affect the equities of the situation, and which should have more or less bearing in dealing with this question of estoppel against Kane which has been raised, and also as to his technical right to make the claims which will be discussed later.

The Kane application was, on May 24, 1915, placed in interference with the patent to one Milton, No. 1,096,048, dated May 12, 1914, which interference is now pending and is, we understand, as

yet undecided by the Patent Office. In the present interference the Patent Office has ruled that, if the Kane-Milton interference is finally decided in favor of Milton, any decision in favor of Kane against Podlesak in this present interference on the question of priority shall be set aside. During the proceedings in the present interference, and after the Milton-Kane interference was declared, and while the attorneys for Kane were seeking to have his application placed in interference with the present Podlesak reissue patent, one of the grounds for the hastening of the interference between Kane and Podlesak and delaying the Milton-Kane interference was that the parties owning the Milton and Podlesak patents were identical, viz: The Webster Electric Company, that is, at that time the point was made by Kane that he as a single party was conducting, or about to conduct, a contest in two different interferences against two parties whose interests were identical, the Milton patent being actually owned by the Webster Electric Company and the Podlesak patent being jointly controlled by the Webster Electric Company and the Splitdorf Electrical Company, the former being licensees. It happens that on May 4, 1916, there was filed for record in the United States Patent Office an assignment, dated April 20, 1916, transferring the whole right, title and interest in the Kane application to the Webster Electric Company. It therefore appears that the Milton-Kane interference is now being conducted in the interests of a single owner, and that the Kane-Podlesak interference is now, as to one party, Kane, being conducted by the Webster Electric Company which is a licensee under the Podlesak patent.

We think it will not be denied that at the time Kane made the invention of his application he was employed by the Webster Electric Company, and that at the time Podlesak filed his application he Kane, knew what Podlesak claimed to have invented, and also knew when the Podlesak patent was issued, and that having failed then to assert his rights as against Podlesak, he should not now be allowed three years after the grant of the Podlesak patent, and nearly six years after his (Kane's) original application was filed, to put in claims which would conflict with and take away the value of the Podlesak patent. This is particularly inequitable in this case because he has assigned all his right, title and interest to the Webster Electric Company, which owns the Milton application and is a licensee under the Podlesak patent.

Every doubt should be resolved against Kane in this manifest attempt of the Webster Electric Company to destroy the property (the Podlesak patent) under which they are licensees; under whose protection they have worked for several years, and under which they have paid and are now paying royalties. It hardly seems that the Webster Electric Company would have paid these royalties to Podlesak, their former employee, unless they considered him to be the true inventor of the invention shown and claimed in the Podlesak reissue patent. Certainly the doctrine of estoppel in the Rowntree vs. Sloan case above referred to should be evoked most strenuously against the Webster Electrical Company, for it has shared in the monopoly of the Podlesak patent for a term of years and now seeks to destroy

the Podlesak monopoly and give to itself a full monopoly for a period of seventeen years or longer.

Counts 1, 2 and 3 have been disposed of. Priority of invention as to these counts has been awarded to Podlesak and no appeal has been taken therefrom. If your Honor finds that the estoppel does not extend to Counts 4 to 9, inclusive, of this interference, then it is respectfully requested that Kane's original disclosure be considered with reference to whether or not there is a proper foundation in this disclosure for the subject-matter of these counts of the interference. In other words, the only element whatever in Counts 4, 5 and 6 of the interference not found in Counts 1, 2 and 3 is the integral bracket, and this integral bracket structure as set forth in the Podlesak patent is not disclosed in the Kane application, and therefore there is no foundation in the Kane application on which to award priority of invention to Kane.

Counts 4 to 9, inclusive, of the interference were copied from Podlesak's reissue patent No. 13,878 and, under the well-settled practice of the Office, these claims should be construed in the light of the disclosure of the patent. Where both parties to an interference are applicants, then the claims are in the process of being formed for patenting, and may be amended or changed. Under such conditions it is possible that the claim should be given the broadest possible interpretation that language will permit. When, however, the counts of an interference are copied from a patent, then the situation is entirely different. The claims forming the counts of the interference are no longer going through the process of being formed, but have been determined and can not be changed. Under these conditions it is believed that the claims which have been copied from the patent should be construed in just the same manner as the patent will be construed by a court to determine just what is the invention covered by the claims of the patent and after this has been determined then it should be considered whether or not the application involved in the interference has disclosed the invention found to be covered by the patent. In the case of Funk & Mickle vs. Whitly, 114 O. G., 971, it was stated:

"Where an applicant copies the claims of a patent for the purpose of provoking an interference * * * if there is any doubt as to the meaning of the issue it shall be construed in the light of the disclosure of the patent."

Podlesak devised an igniter mounting for internal combustion engines. One of the purposes of this mounting is clearly set forth in the description of the patent beginning with line 46 on page 1, as follows:

"As the igniter and generator must be removed from time to time for cleaning the electrodes and other reasons, it is of great importance that the igniter and generator be replaced in exactly the same position as it was before removal; otherwise, the push rod will not be disposed in proper relation to the trip finger of the rotor to accomplish satisfactory results in the operation of the engine, generator and igniter."

In order to accomplish this purpose Podlesak provided a bo portion 1, which passed through an opening in the cylinder he and in this body portion he mounted both the fixed electrode a the movable electrode. In order to provide a support for the g erator which would permit it to be quickly removed and again turned and placed in exactly the same position, Podlesak provid the following structure:

"The outer end of the igniter body is formed with a rhomboi plate 5 which, as shown in Fig. 1, has bolt receiving openings 6 t are slightly larger in diameter than the fastening bolts or studs that pass through the openings and are fastended to the cylind head A. * * * Extending from the plate portion 5 of t igniter body is a shelf or bracket A, which forms a base to whi the generator C is removably secured by stud bolts 9.

(Lines 7 to 26 of page 2.)

The patentee describes the generator C as follows:

"The generator comprises permanent horseshoe magnets 17 fa tened to E-shaped pole pieces 18, on the middle projections of whi are generating coils 19. In the present drawings only one pole pie and coil is shown in Fig. 1, the other corresponding parts being co cealed from view. Between the pole pieces oscillates a cruciform rotor 20 mounted on a shaft 21, which has at one end oppositely d posed crank arms 22 which are connected with springs 23 that a sume an alining position through the axis of the rotor when t latter is idle, the outer ends of the springs being fastened to studs on the generator frame. On the opposite end of the rotor shaft is trip finger 25, which is adapted to have a wiping engagement wi a push rod 26 or other equivalent actuator, which rod has its en opposite from the trip finger connected with the crank pin 27 of t rotating shaft 16."

(Lines 56 to 77, page 2.)

From the above quoted description it will be apparent that one the features of the Podlesak construction consists of the body portio in which the electrodes are mounted, which body portion is provide with a plate having extending therefrom a shelf or bracket 8, o which this generator C is removably secured. Means is also provide for fixing the body portion B and the plate 5 in definite relation t the cylinder, so that the generator and igniter as a whole may be re moved and again replaced in exactly the same position as before re moval. Also by taking out the stud bolts 9 the generator may b removed from the shelf, and when again placed on the shelf there i no possible chance of changing its angular position relative to th push rod, as the shelf is held in fixed position relative to the pus rod, and when the generator is again placed on the shelf it will b replaced in this same fixed position as before removal.

The patentee clearly describes just what his generator consists of and it includes not only the pole pieces, but also the rotor, the shaf

which supports the same, and the trip finger which is engaged by the push rod. When the generator is removed from the shelf it is removed as a whole and another generator can be placed on the shelf, and it will be set in proper position so that the timing will not be in any way disturbed.

Claims 19 to 24, inclusive, define in more or less general terms the generator and the fixed and movable electrodes. The especially novel feature running through each of these claims is this mounting for the electrodes and generator, which has been referred to above. Claim 19 of the patent, which is Count 4 of the interference, includes as an element "an integral bracket upon and in which all the aforesaid mechanism is mounted." The aforesaid mechanism referred to is the fixed and movable electrodes and the generator which has a rotor, an arm connected therewith, springs tending to hold the rotor in a given position, spring means of less tension operating on the arm connected to the movable electrode to hold the same in engagement with the arm on the rotor.

Claim 20, which is Count 5 of the interference, also describes more or less generally the fixed and movable electrodes and the generator and includes as the novel element "an unitary bracket comprising a body in which the fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith upon which the generator is mounted."

Claims 21, 22, 23 and 24 of the Podlesak patent, which are, respectively, Counts 6, 7, 8 and 9, each include more or less specifically this integral bracket having a body in which the electrodes are mounted and a shelf or base on which the generator is mounted.

If your Honor will bear in mind the subject-matter of Counts 1, 2 and 3, which are to stand as Podlesak's invention and which clearly cover the idea of the fixed and movable electrodes, a generator having a rotor, an arm connected with the rotor, spring means tending to hold the rotor in a given position, spring means operating on the arm carrying the movable electrode to hold the same within the range of the arm carried by the rotor, together with a trip device for actuating the rotor, it will be apparent that the added novel feature in these Counts 4 to 9 of the interference is the bracket construction for supporting the electrodes and the generator, so that the generator may be removed as a whole and replaced in the same position as before it was removed. With this understanding of the Podlesak invention as set forth in Counts 4 to 9, inclusive, the application of Kane will now be considered.

As has been noted above, Kane's application involved in the interference is alleged to be a division of an application, Serial No. 541,428, filed February 2, 1910, and it is by reason of this early date of this parent application that Kane was awarded priority of invention on the record by the Examiner of Interferences. If there is no foundation in this parent application, filed February 2, 1910, for the subject-matter forming the counts of the present interference, then the decision of the Examiner of Interferences should be reversed

and priority of invention should be awarded to Podlesak, even though there be no estoppel.

Kane, in his original application, stated:

"The engine cylinder is provided with the usual side opening adapted to receive the usual igniter block 8."

(Page 2, line 23 to 26.)

"Secured to the igniter block 8 and preferably cast integral therewith is an arm 14 extending for a short distance approximately parallel with the outer wall of the cylinder 1 and provided at its forward extremity with the angular bearing portion 15, into which the shaft 16, on which is carried the armature or inductor, is journaled."

(Page 3, lines 7 to 12.)

Page 4, beginning with line 6, it is stated that:

"there is a supporting block 25 in contact with the sleeve 15 and secured thereto by a set screw 25^a."

This is Kane's entire disclosure, as to means for supporting the fixed and movable electrodes and the generator.

From this disclosure it is apparent that the angular bearing portion 15 is the journal bearing for the shaft 16, on which is carried the armature or inductor. In other words, the angular bearing portion 15 is a part of the generator, the shaft of the generator being journaled in said bearing. It is nowhere stated that by removing the set screw 25^a the field portion of the generator may be removed from the sleeve 15, but, even admitting that it could be, the only way in which the generator may be removed from the igniter block 8 is by taking it to pieces. Let us suppose that, for some reason or other, the generator has to be changed. The entire mounting, including the igniter block and the bearing portion 15, would have to be renewed, as this bearing portion 15 is the journal for the armature or inductor shaft. There is certainly no disclosure in the original Kane application of any unitary bracket "comprising a body in which the relatively fixed and movable electrodes are mounted and a shelf extending laterally therefrom and integral therewith, upon which the generator is mounted." This shelf of the Podlesak patent forms a supporting base on which the generator as a whole is mounted and from which it may be removed as a unit and again replaced in exactly the same position as it was before removal. Neither the shelf structure nor the equivalent thereof is disclosed by Kane. The sleeve 15 is a part of the generator in the Kane structure, as above noted. Where, then, in Kane is the equivalent of the shelf on which the generator, as a unit, is removably mounted?

Figure 4 of the drawings of the Podlesak patent illustrates very clearly the trouble which follows the defective positioning of the igniter. Any shifting of the generator relative to the push-rod bodily or angularly is undesirable and leads to inefficiency. Podlesak, by his integral bracket structure and supporting shelf, insures

that the generator shall be maintained in proper position relative to the push-rod, even though it be removed and replaced on another generator substituted therefor. The Kane parent application does not disclose either in its description or in its drawings a bracket structure such as defined in the description in the Podlesak patent and set forth in the claims corresponding to Counts 4 to 9, inclusive, of the interference.

The divisional application as originally filed forms no better foundation for the subject-matter of the counts of this interference. The divisional application was amended to state as follows:

"Pole pieces 20 and 21 are carried on supporting block 25, which is secured by set screw 25ª to the bearing member or bracket on or in which the magneto generator is mounted, thus rendering the magneto generator proper detachable from its firm supporting base, shelf or bracket formed integrally with ignition block or plug 8, as described."

This amendment imports into the specification of the Kane application terms somewhat similar to those used in the claims of the Podlesak patent forming the counts of the present interference. There was, however, no suggestion whatever in the parent application of Kane that the generator proper was carried by a shelf or bracket formed integral with the igniter block and detachable therefrom. Furthermore, these terms as applied to Kane's disclosure have no meaning. Kane has not pointed out by a reference letter what he considers to be his supporting base, shelf or bracket. If he has reference by these terms to the angular portion 15, then the description is inaccurate in its statement that the magneto generatoor proper is detachable from its supporting base, shelf or bracket 15. This angular portion 15 is a part of the generator, and is described as the bearing for the armature shaft. If the igniter block 8 is considered the supporting base, shelf or bracket, then the magneto proper is not detachable from this member. It is perfectly apparent from a cursory consideration of these terms imported into the description by amendment that they have no meaning whatever as applied to the Kane disclosure, and certainly they do not define the invention which Podlesak has described and claimed in his patent.

The Law Examiner in considering the counts of the interference held that the parts 8, 14 and 15 of Kane constitute an integral and unitary structure and they also support the parts of the apparatus as stated in the counts. The Law Examiner further states there is no limitation in the counts as to the character of the shelf or base other than it shall extend laterally from the body and shall support certain parts. It is believed in the first place that the Law Examiner was in error in his interpretation of the claims of the Podlesak patent. In the light of the description of the patent to Podlesak the shelf or base had a certain function. It is so constructed that the generator may be mounted upon the same. To find the equivalent of the shelf or base described and claimed by Podlesak it is believed your Honor

must find in the Kane disclosure a structure on which the generator as a unit may be mounted and from which it may be detached and another generator substituted therefor. It is furthermore believed that your Honor should find a support of such a character that of itself it shall be the equivalent of a shelf or base on which the generator may be placed and upon which it will rest. There is no support in the Kane disclosure on which the generator as a unit is mounted and from which it may be detached. The member 15 as pointed out above is a part of the generator. It is the bearing for the armature shaft. But even if your Honor should consider that this bearing 15 is the support for the generator, still it is not a shelf or a base on which the generator may be mounted. In other words in the Podlesak patent there is a flat shelf or base on which the generator as a unit is placed and which determines the position of the generator relative to the trip device. According to the description of the Kane device, the support 25 is secured to the part 15 by a set screw 25^a. There is nothing to prevent the turning of this support 25 angularly about the sleeve. In other words, there is nothing to bring about the fixed position of the generator supported by the shelf or base as in the Podlesak invention.

It is not thought necessary to discuss in detail each of the Claims 19 to 24 of the Podlesak patent forming Counts 4 to 9 of the present interference, as this same limiting feature which has been discussed above runs through all these counts.

It is believed your Honors will find that irrespective of the question of Kane being estopped from making the counts of the interference by his laches, that there is no foundation in the Kane application as originally filed, or even as amended, for claims defining the invention claimed in the Podlesak patent.

For reasons above stated, it is respectfully urged that the Examiners-in-Chief were correct in awarding priority of invention to Podlesak; that Kane is clearly estopped by reason of his laches from making any of the counts of the interference; and that Kane is further estopped from making Counts 4 to 9, inclusive, of the interference by reason of the fact that there is no foundation in his application for the subject-matter set forth in detail in these claims.

Respectfully submitted,

H. R. Van Deventer, Sturtevant & Mason,
Attorneys for Podlesak. March 8, 1917.

Intf. No. 39,181, Paper No. 54

Recorded, Vol. 123, P. 181

Hearing March 14, 1917. S. E. T.

In the United States Patent Office

Patent Interference No. 39,181

PODLESAK

vs.

KANE.

Appeal from Examiners in Chief

Electric Lighters

Reissue patent of Emil Podlesak granted February 9, 1915, No. 13,878, on application filed December 23, 1914, original patent granted March 4, 1913, No. 1,055,076, on application filed April 15, 1912.

Application of Edmund J. Kane filed January 14, 1915, No. 2097, division of application filed February 2, 1910.

Mr. H. R. Van Deventer and Messrs. Sturtevant & Mason for Podlesak.

Messrs. Williams & Bradbury for Kane.

This is an appeal by Kane from a decision of the examiners-in-chief reversing the decision of the examiner of interferences and awarding priority of invention to Podlesak.

Podlesak moved to dissolve on the ground that Kane could not make the claims. The law examiner denied the motion. The examiner of interferences entered a judgment in course in favor of Kane. Podlesak appealed to the examiners-in-chief who reversed the examiner of interferences.

The examiners-in-chief held as to counts 1, 2, and 3, which are identical with claims 13, 14, and 15 of Podlesak's original patent, that Kane should, under the decision in Rowntree v. Sloan, 227 O. G., 744 (not yet published in App. D. C.), have come in within one year from the granting of the patent, and that as to counts 4 to 9, inclusive, which are claims 19 to 24, inclusive, of the reissue patent, the subject matter is the same as counts 1 to 3 and therefore Kane must be considered to have had notice of these also from the time of the granting of the original patent, in spite of the fact that the claims first appeared in the reissue patent, and that Kane filed within a month of the granting of the reissue patent.

Kane has taken no appeal as to counts 1, 2 and 3. As to counts 4 to 9, I am not disposed, in the absence of experience with the rule, to acquiesce in the extension of the Rowntree-Sloan decision which the examiners-in-chief have made in applying it to this case.

A comparison of his disclosure with the patent to Weber, No. 820,535, shows that Podlesak was undertaking to improve thereon in certain rather slight particulars in so far as the recitals of counts 4 to 9 are concerned. Referring, for example, to count 4: Weber discloses all of the elements recited therein combined to operate in the same manner, excepting that the relative tension of the springs is not disclosed in his patent, and that instead of an integral bracket he has a bracket made up of two parts rigidly fastened together.

The law examiner treats the question presented respecting Kane's structure as one of mere adjustment of the anvil 29. It is, however, clear that Podlesak from the start was interested in the question of normal contact or non-contact of the electrodes. In the original specification of his patent, he says, page 7:

The spring 33 is of less tension that the return springs 23 of the rotor and is sufficient to maintain the arms 31 and 32 in contact during the first part of the cocking movement of the armature and to maintain the electrodes in contact during the final part of such cocking movement, it being understood that the electrodes are normally separated, and that they come into contact before the rotor or armature finishes its cocking movement, or the position of the rotor shown by dotted lines in Figure 1.

This language is found in the reissue patent, page 2, lines 98 to 110, inclusive.

The relative tensioning of the springs was for the purpose of keeping the electrodes normally separated. It seems to me not reasonable to permit Kane to take these claims and apply them to a machine wherein, as he says in his original application, and in the present application, the contracts normally remain in contact (see original application of patent No. 1,204,573, lines 12 and 13).

Moreover, the language of count 4 is clearly descriptive of Podlesak's improvement upon the Weber design, whereas it is a straining of the language to say that the mechanism of Kane is mounted upon his integral bracket.

The foregoing remarks apply to count 5. There is clearly in the Kane construction no shelf upon which the generator is mounted. This latter distinction applies also to count 6. Count 7 specifies a supporting shelf or base, and counts 8 and 9, a base upon which the generator is mounted.

The distinction relied upon is one which necessarily implies a very material difference in the designs. Podlesak, adopting the Weber design, made certain changes in details of construction, while Kane effected somewhat the same result by redesigning the Weber machine.

Where refinements such as are here involved are relied upon for patentability, it would seem that the rule that claims which are taken from a patent for purpose of interference are to be interpreted according to the language of the patent, is peculiarily applicable.

The conclusion is that Kane cannot make the claims constituting counts 4 to 9.

The examiners-in-chief are sustained.

Thomas Ewing, Commissioner, June 18, 1917.

Docket Clerk,
Aug. 6, 1917,
U. S. Patent Office.

Mail Room,
Aug. 6, 1917,
U. S. Patent Office.

Intf. No. 39,181, Paper No. 56

United States Patent Office

Interference No. 39,181

Emil Podlesak

vs.

Edmund J. Kane.

Notice of Appeal

Now comes Edmund J. Kane and Webster Electric Company, assignor, by his and their attorneys Williams & Bradbury, and gives notice to the Commissioner of Patents of his and their appeal to the Court of Appeals of the District of Columbia from the decision of the said Commissioner rendered on or about the 18th day of June, A. D. 1917, awarding priority of invention to Podlesak in the above entitled case, and assign as his and their reasons of appeal the following:

(1) That the said Commissioner erred in holding Emil Podlesak to be the original and first inventor of counts 4 to 9 inclusive of the issue of the said interference.

(2) That the said Commissioner erred in not awarding priority of invention to Edmund J. Kane as to counts 4 to 9 inclusive of the issue of the said interference.

(3) That the said Commissioner erred in finding and holding that the subject matter of counts 4 to 9 inclusive of the issue of the said interference are not disclosed in the application of the said Edmund J. Kane.

And the Honorable Commissioner of Patents is hereby requested to furnish the said Court of Appeals with a certified transcript of the records and proceedings relating to this interference.

Edmund J. Kane and Webster Electric Company, By Williams & Bradbury, His and Their Attorneys. Chicago, Illinois, August 3, 1917.

Endorsed on cover: Commissioner of Patents. Patent appeal docket, No. 1147. Edmund J. Kane, appellant, vs. Emil Podlesak. Court of Appeals, District of Columbia. Filed Sep. 20, 1917. Henry W. Hodges, clerk.

[File endorsement omitted.]

Office Supreme Court, U. S.
FILED
JUL 31 1922
WM. R. STANSBURY
CLERK

IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, A. D. 1921.

No. 520 93

WEBSTER ELECTRIC COMPANY,
Petitioner.

vs.

SPLITDORF ELECTRICAL COMPANY.

PETITION FOR A WRIT OF CERTIORARI TO THE CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT, AND BRIEF IN SUPPORT THEREOF.

WILLIAM B. KERKAM,
LYNN A. WILLIAMS,
ALBERT G. McCALEB,
Counsel for Petitioner.

Eastman Bros., Law Printers, 542 S. Dearborn St., Chicago.

IN THE

SUPREME COURT OF THE UNITED STATES.

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WEBSTER ELECTRIC COMPANY,
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vs.

SPLITDORF ELECTRICAL COMPANY.

PETITION FOR A WRIT OF CERTIORARI TO THE CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT, AND BRIEF IN SUPPORT THEREOF.

To the Honorable, the Chief Justice and Associate Justices of the Supreme Court of the United States:

Your petitioner, Webster Electric Company, respectfully prays for a writ of certiorari to review a judgment by the Circuit Court of Appeals for the Seventh Circuit.

The Court of Appeals has declared a patent void by sustaining a novel defense which was never before considered in any published decision. Petitioner's counsel estimate that this defense, if a defense, will invalidate fully one-half of the United States patents in existence.

Questions Presented.

1. When a patent covering a novel invention of merit is issued in full compliance with the statutes, may it be held invalid for either of the following reasons:

(*a*) Because the patentee's invention was put in public use *during the pendency of his application*, but two years before he formulated an allowable claim properly defining his actual invention.

(*b*) Because the invention was disclosed, but *not claimed*, in patents *issued during the pendency* of his application, but two years before he formulated an allowable claim to his invention.

2. When a patent covering a novel invention of merit is issued in full compliance with the statutes, may its validity be challenged because of an alleged failure of the Patent Office to enforce a non-statutory doctrine* established solely to expedite Patent Office procedure.

Proceedings Below.

Petitioner (plaintiff) charged, *inter alia*, that the Splitdorf Electrical Company had infringed Kane patent No. 1,280,105, granted September 24, 1918. The District Court found claims 7 and 8 of the patent valid and infringed, but was reversed by the Circuit Court of Appeals—the latter court filing *two opinions*. In its first opinion, the Court of Appeals found claims 7 and 8 void for want of novelty. A rehearing was granted, and on May 8, 1922, said court filed a second opinion *admitting error* in the first, finding that claims 7 and 8 cover a novel and meritorious invention, but holding

* The doctrine governing Patent Office interference practice which was criticized and corrected by this court in *Chapman* v. *Wintroath*, 252 U. S. 126.

them invalid solely because they were not formulated and presented in the patent application until shortly before its allowance. In support of its decision, the Court of Appeals evolved what we consider to be an *unwarranted* and *most dangerous* interpretation of the opinion by Mr. Justice Clarke in *Chapman* v. *Wintroath, supra.*

Brief Statement of the Case.

The record shows that the invention in suit filled a long felt want, and in a most startling and gratifying manner turned abject failure into phenomenal success.

The Kane patent in suit issued on an application which was filed January 14, 1915, and which constituted a proper division of a *then pending* original application filed February 2, 1910. When the divisional application was filed, it did not include claims 7 and 8. The claims were not and *could not* be inserted until very shortly before the allowance of the application for two amply sufficient reasons. The *first* of these reasons is that the application was, under the Patent Office rules, not subject to amendment during a period including the years 1915-16-17 and 18. During this period, it was tied up in an interference which was bitterly contested by the Splitdorf Electrical Company—the same party who now charges laches in submitting claims 7 and 8. The *second* reason is that the intangible thing—the invention—proved to be an unusually difficult thing to describe by patent claims. It was not until after the invention had been scrutinized, weighed and analyzed by the courts and Patent Office tribunals in several suits and interferences that the *real invention* and the proper language for defining it were determined. Even the distinguished Circuit Court of Appeals frankly ad-

mits that in its first opinion it fell into error solely through its failure to perceive the real invention.

The real invention of Mr. Kane, *i. e.*, the thing covered by claims 7 and 8 was disclosed but not claimed in certain Milton and Podlesak patents, which were issued two years before claims 7 and 8 were presented in Mr. Kane's divisional application. However, Mr. Kane was most diligently prosecuting his divisional application *well within two years* after the grant of each of these patents. Claims 7 and 8 of the Kane patent are entirely unlike any claims in the Milton and Podlesak patents.

Mr. Kane's invention was marketed by petitioner in enormous quantities during the pendency of the patent applications, and the invention had been in public use for over two years before claims 7 and 8 were finally formulated. This circumstance is very common. Inventions of great merit cannot be withheld from the public until the Patent Office functions.

The Court of Appeals admits the novelty and utility of the invention of the claims in suit, but has held such claims invalid upon the theory that, in the period devoted to contesting interferences and overcoming the arguments of the Primary Examiner, the unfortunate patentee abandoned his invention through his failure, or more correctly, *inability*, to submit allowable claims to his real invention before such invention had been in public use for two years, and before it had been published for two years by the issuance of the patents to the parties Milton and Podlesak, *who did not invent* and did not in their Patent Office applications claim the invention in question. The Supreme Court decision in *Chapman* v. *Wintroath*, 252 U. S. 126, is relied upon for this extraordinary conclusion.

In *Chapman* v. *Wintroath*, the Supreme Court con-

sidered a doctrine in Patent Office interference practice which had recently been established by the Court of Appeals for the District of Columbia in the exercise of its appellate jurisdiction over the Patent Office. The doctrine in question was found to be harsh and repugnant to the patent statutes, and was duly corrected. But the Seventh Circuit Court of Appeals regards this remedial decision as authority for vitiating a patent of merit which issued pursuant to strict compliance with all of the patent statutes. Petitioner submits that so to interpret *Chapman* v. *Wintroath* is virtually to assume that the Supreme Court amended the patent statutes when it rendered its decision in that case.

Reasons of Public Import For the Issuance of the Writ.

This case is of great importance for the following reasons:

The Court of Appeals has given to a decision of the Supreme Court a construction which casts most serious doubt upon the validity of thousands of important patents which, like the patent here involved, have issued on applications which could not be rushed through the Patent Office.

The Court of Appeals has converted a doctrine which is properly applicable only to a relatively small number of *applicants* for patents, into an absolute menace to thousands of *patentees* whose patents were applied for and granted in strict compliance with the patent statutes, but who have been unable to put their patent applications into final form until two years after the commencement of public use or publication.

The decision of the Court of Appeals penalizes a patentee because his application became involved

in interference in accordance with Section 4904 of the Revised Statutes.

It virtually charges that in *Chapman* v. *Wintroath* the Supreme Court exercised legislative powers.

It is in direct conflict with the Supreme Court decision in *U. S.* v. *American Bell Telephone Co., et al.*, 167 U. S. 224.

It is obnoxious to Sections 4886, 4887 and 4920 of the Revised Statutes.

It defeats the long established policy of the patent laws to reward the inventor who is the first to conceive and perfect his invention and to disclose it to the public.

It denies a patentee a right, which became his by binding contract with the United States, when his patent issued for a novel invention pursuant to an application filed and prosecuted in strict compliance with the statutes.

It has vitiated a patent for a novel and meritorious invention upon a most extraordinary ground never considered by the Supreme Court.

It defeats justice and is inconsistent with the established patent law of this country as defined by the Supreme Court and the several Courts of Appeals.

For these reasons, it is submitted that a writ of certiorari should be issued and the questions involved be determined by this court.

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BRIEF IN SUPPORT OF PETITION.

Statutes Involved.

Sec. 4886. Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his *application*, and not in public use or on sale in this country for more than two years prior to his *application*, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor.

Sec. 4887. . . But no patent shall be granted on an *application* for patent for an invention or discovery or a design which had been patented or described in a printed publication in this or any foreign country more than two years before the date of the *actual filing of the application* in this country, or which had been in public use or on sale in this country for more than two years prior to such *filing*.

Sec. 4894. All applications for patents *shall be completed and prepared for examination within one year after the filing of the application*, and in default thereof, or upon failure of the applicant to prosecute the same within one year after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

Sec. 4903. Whenever, on examination, any claim for

a patent is rejected, the Commissioner shall notify the applicant thereof, giving him briefly the reasons for such rejection, together with such information and references as may be useful in judging of the propriety of renewing his application or of altering his specification; and if, after receiving such notice, the applicant persists in his claim for patent, *with or without altering his specifications*, the Commissioner shall order a re-examination of the case.

Sec. 4904. Whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any pending application, or with any unexpired patent, he shall give notice thereof to the applicants, or applicant and patentee, as the case may be, and shall direct the Primary Examiner to proceed to determine the question of priority of invention. And the Commissioner may issue a patent to the party who is adjudged the prior inventor, unless the adverse party appeals from the decision of the Primary Examiner, or of the Board of Examiners-in-Chief, as the case may be, within such time, not less than twenty days, as the Commissioner shall prescribe.

Sec. 4920. In any action for infringement the defendant may plead the general issue, and, having given notice in writing to the plaintiff or his attorney thirty days before, may prove on trial any one or more of the following special matters:

First: That for the purpose of deceiving the public the description and specification filed by the patentee in the Patent Office was made to contain less than the whole truth relative to his invention or discovery, or more than is necessary to produce the desired effect; or,

Second: That he had surreptitiously or unjustly obtained the patent for that which was in fact invented by another, who was using reasonable diligence in adapting and perfecting the same; or,

Third: That it has been patented or described in some printed publication prior to his supposed invention or discovery thereof, or more than two years *prior to his application* for a patent therefor; or,

Fourth: That he was not the original and first inventor or discoverer of any material and substantial part of the thing patented; or,

Fifth: That it had been in public use or on sale in this country for more than two years before his *application* for a patent, or had been abandoned to the public.

And in notices as to proof of previous invention, knowledge, or use of the thing patented, the defendant shall state the names of the patentees and the dates of their patents, and when granted, and the names and residences of the persons alleged to have invented or to have had the prior knowledge of the thing patented, and where and by whom it had been used; and if any one or more of the special matters alleged shall be found for the defendant, judgment shall be rendered for him with costs. And the like defenses may be pleaded in any suit in equity for relief against an alleged infringement; and proofs of the same may be given upon like notice in the answer of the defendant, and with the like effect.

ACT OF FEB. 9, 1893, CH. 74; 27 STAT. L., 434.

SEC. 9. That the determination of appeals from the decision of the Commissioner of Patents, now vested in the general term of the Supreme Court of the District of Columbia, in pursuance of the provisions of Section seven hundred and eighty of the Revised Statutes of the United States, relating to the District of Columbia, shall hereafter be, and the same is hereby, vested

in the Court of Appeals created by this act; and in addition any party aggrieved by a decision of the Commissioner of Patents in any interference case may appeal therefrom to said Court of Appeals.

First Question.

When a patent covering a novel invention of merit is issued in full compliance with the statutes, may it be held invalid for either of the following reasons:

(a) Because the patentee's invention was put in public use during the pendency of his application, but two years before he formulated an allowable claim properly defining his actual invention?

(b) Because the invention was disclosed, but not claimed, in patents issued during the pendency of his application, but two years before he formulated an allowable claim to his invention?

The Milton and Podlesak patents did not claim the invention in controversy. If they have any standing in this case, it is merely as *publications* occurring during the *pendency* of Mr. Kane's patent applications. The failure of the Milton and Podlesak patents to claim the invention in controversy is discussed in a following section of this brief.

Prior public use and prior publication of a patented invention are, and always have been considered, statutory defenses. They are two of the defenses recognized by Section 4920 of the Revised Statutes (page 8, *ante*). Hence, we must look to the patent statutes to determine when a public use or publication of an invention will invalidate a patent covering such invention.

In referring to Section 4886 of the statutes (page 7, *ante*) to determine the kinds of public use and publica-

tion which will bar an inventor's right to a patent, we find that the public use to be effective as a bar must occur "*more than two years prior to his application,*" and that publication to be effective as a bar must also occur "*more than two years prior to his application.*" So far as this section of the statutes is concerned, neither a public use nor publication constitutes a bar to a patent if it does not occur more than *two years prior* to the *application* for the patent. There is nothing in this section of the statutes which affords the slightest basis for the proposition that a public use or publication occurring during the *pendency* of a patent application can invalidate a patent granted on such application.

Referring to Section 4887 of the statutes (page 7, *ante*) which is specifically concerned with the effect of public use and publication, we find that no patent shall be granted for an invention if it has been "described in a printed publication in this or any foreign country more than two years *before* the date of the *actual filing* of the *application.*" This section also provides that no patent shall be granted if the invention has been "in public use or on sale in this country for more than two years *prior* to such *filing.*" There is nothing in this section of the statutes which in the slightest degree supports the contention that public use or publication of a patentee's invention, which occurred less than two years before his application for patent, can invalidate his patent. But to contend that publication or public use occurring during the *pendency of the application* invalidates the patent is obviously fallacious and is repudiated by this section of the statute.

Referring now to Section 4920 of the statutes (page 8, *ante*) which enumerates the special defenses which may be presented by a defendant who challenges the

validity of a patent, we find that the defendant may contend with respect to the patentee's invention—

> "That it had been patented or described in some printed publication prior to his supposed invention, or discovery thereof, or more than two years *prior* to his *application* for a patent therefor;"

or

> "That it had been in public use or on sale in this country for more than two years *before* his *application* for a patent, or had been abandoned to the public."

The above are the third and fifth defenses enumerated in Section 4920 of the statutes. They are the only ones of these defenses which are concerned with public use or publication. There is nothing in this section of the statutes which is, in any way, compatible with the proposition that public use or publication occurring *less* than two years prior to a patent *application*, or during the *pendency* of the application, is a bar to the grant of a patent on such application.

The meaning of the herein discussed sections of the patent statutes is unmistakable. They have stood the test of the years, and constitute the bulwark of our patent system. Never has any court found in these statutes a basis for the proposition that a public use or publication of a patented invention, which occurs during the *pendency* of the application or *less* than two years prior to its filing, can constitute a bar to the patent granted thereon.

We believe that the Court of Appeals fell into error through its failure to consider the patent statutes. Its decision ignores them. But regardless of whether the Court of Appeals be right or wrong the question involved is so momentous that the public good requires that it be definitely answered by the Supreme Court of the land.

Second Question.

When a patent covering a novel invention of merit is issued in full compliance with the statutes, may its validity be challenged because of an alleged failure of the Patent Office to enforce a non-statutory doctrine* established solely to expedite Patent Office procedure?

*** The doctrine governing Patent Office interference practice which was criticized and corrected by this court in Chapman vs. Wintroath, 252 U. S. 126.**

When, by Section 9 of the Act of Feb. 9, 1893 (page 9, *ante*), Congress gave the Court of Appeals for the District of Columbia appellate jurisdiction over the Patent Office in interference cases, such court was *ipso facto* vested with power to establish and enforce any lawful rule or doctrine that will simplify and expedite the determination of interferences. The Patent Office has always exercised such power, and it is unquestionably possessed by the Court of Appeals for the District of Columbia.

It was in the apparent exercise of such power that the Court of Appeals for the District of Columbia announced, and for a time enforced, the doctrine that an applicant copying claims from an issued patent for the purpose of an interference must copy such claims within *one year* after the grant of the patent. This doctrine was considered by the Supreme Court in *Chapman* v. *Wintroath*, 252 U. S. 126, and was found invalid because repugnant to the patent statutes. The decision of the Supreme Court implied that the aforesaid doctrine would have been lawful had it required the applicant to copy the issued claims within *two years* instead of within *one year*. But certainly the Supreme Court, in *Chapman* v. *Wintroath*, went no further than

to criticize and correct a doctrine applicable *solely* to Patent Office interference practice. Admitting that it is lawful for the Patent Office and the Court of Appeals for the District of Columbia to establish reasonable rules and doctrines governing the conduct of *applicants* for patents, does it necessarily follow that an *issued* patent granted under and in full compliance with the statutes can be vitiated merely because some such rule or doctrine was not enforced with the utmost rigidity while the application for the patent was pending? The answer must be "No."

Our negative answer to the second of the questions presented by this petition is supported by two controlling propositions. The first of these is the fundamental proposition that a right created by statute is immune from attack on any ground not recognized by the statute creating it. The second proposition is that an affirmative answer to the question would be out of harmony with the patent statutes and particularly repugnant to Section 4920 of the Revised Statutes (page 8, *ante*).

A patent represents a solemn contract between the sovereign power of the United States on the one hand, and the patentee on the other. The patentee in return for giving the public a description of his contribution to human progress is given the exclusive right to make, use and vend his invention for a limited period of years. His monopoly is created by and governed solely by the patent statutes. The validity of the patent as such must be attacked, if at all, upon statutory grounds. An infringer who defends on the ground that the patent is *invalid* must look to the *statutes* for his defenses.

That the validity of a patent is not subject either to direct or collateral attack upon any ground not recognized by the patent statutes was settled by the Supreme

Court in the case of *United States* v. *American Bell Telephone Co., et al.*, 167 U. S. 224. In speaking of the statutory right secured to an inventor by his patent grant the court said:

> "The statute has given this right, and no consideration of public benefit can take it from him. His right exists because Congress has declared that it should. . . . A party seeking a right under the patent statutes may avail himself of all their provisions, and the court may not deny him the benefit of a single one. These are questions not of natural, but of purely statutory, right. . . . No court can disregard any statutory provisions in respect to these matters on the ground that in its judgment they are unwise or prejudicial to the interests of the public. . . . As the law making power has prescribed what the public will give, specified the terms and conditions of the purchase, indicated the time and methods of determining the right of compensation, he on his part has an absolute legal right to avail himself of all the provisions thus made. It is not, of course, doubted that the courts in construing the patent, as well as all other statutes, must have regard to the spirit as well as the letter. That simply requires that courts shall ascertain their true meaning, but when that is ascertained the applicant for a patent is entitled to all benefits which those statutes thus construed give."

Congress in creating our patent system realized that, if unrestrained, infringers would devise all sorts of elaborate and far-fetched defenses in their attempts to defeat the purposes of the patent statutes. As a preventive measure, Congress enacted a statute (Section 4920, page 8, *ante*) which enumerates and defines the special defenses which may be pleaded by a defendant who challenges the validity of a patent. Needless to say an infraction of a Patent Office rule or doctrine is *not* one of these defenses.

It is submitted that when a patent is issued, it has

gone forever beyond the control of the tribunals concerned in the issuance of patents, and that no rule or doctrine, established by the Patent Office or the Court of Appeals of the District of Columbia, no matter how reasonable, can be invoked to destroy it, since the patent monopoly was created by statute, and can be destroyed solely upon statutory grounds. Hence, we urge that the Court of Appeals for the Seventh Circuit seriously erred when it came to the conclusion that the Kane patent can be destroyed upon the authority of the rule or doctrine of *Chapman* v. *Wintroath*.

Divisional Patent Applications.

In the Court of Appeals, counsel for the respondent in referring to the Supreme Court decision in *Chapman* v. *Wintroath* said:

> "It would seem inevitable, from the reasoning of its opinion, that it will hold, when the question comes squarely before it for decision, that a divisional application, like an original application, must stand on its own bottom and be judged by its own date with respect to the statutory defenses applicable to the date of filing an application—especially where, as in the case at bar, the original application contained no claim to the invention in question."

This is a startling argument in view of the decisions which uniformly have held that a divisional application must be judged as if filed on the date of the filing of the original application of which it is a division.

In *Smith & Griggs Mfg. Co.* v. *Sprague*, 123 U. S. 249, one of the patents in suit was granted on an original application, while the other was granted on a divisional application filed a year later. But the Supreme Court held:

> "For the purposes of this case, therefore, the

> date of the application is to be taken as of December 2, 1878, being the earlier of the two."

And in *H. J. Heinz Co.* v. *Cohn*, 207 Fed. 547, the Ninth Circuit Court of Appeals held, referring to the two patents in suit:

> "The latter, being divisional relative to the former, relates back to the date of the original application."

Respondent's argument is nothing short of incomprehensible, however, when we find it conclusively answered by the Supreme Court in the very decision upon which such argument is based.

In demonstrating that no estoppel to copy claims from an issued patent could possibly arise within at least two years after the issuance of that patent, the Supreme Court said:

> "There is no suggestion in the record that the original application of the Chapmans was not prosecuted strictly as required by the statutes and the rules of the Patent Office, and therefore, it is settled their rights must not be denied or diminished on the ground that such delay may have been prejudicial to either public or private interests." (Citing and quoting from *U. S.* v. *American Bell Telephone Company, et al.*, 167 U. S. 224.)

As if for the very purpose of answering the argument which the respondent made to the Court of Appeals, the Supreme Court said:

> "To this we must add that not only have later or divisional applications not been dealt with in a hostile spirit, by the courts, but, on the contrary, designed as they are to secure the patent to the first discoverer, they have been favored to the extent that where an invention clearly disclosed in an application, as in this case, is not claimed therein, but is subsequently claimed in another application the original will be deemed a constructive reduction of the invention to practice, and the later one will be given the filing date of the earlier, with all of its priority

right. *Smith & Griggs Mfg. Co.* v. *Sprague*, 123 U. S., 249, 250; *Van Recklinghausen* v. *Dempster*, 34 D. C. App., 474, 476, 477."

And the Supreme Court used this language:

> "The Chapmans, while asserting that their parent application fully disclosed the invention involved, admit that the combination of the Wintroath patent was not specifically claimed in it."

It conclusively appears that respondent's interpretation of the Chapman case and its contention that the claims of the Kane patent are invalid, because based on a divisional application, are entirely without merit. Kane's divisional application very clearly had all of the priority of right of the original application which was filed on February 2, 1910. The Court of Appeals erred when influenced by respondent's argument to the contrary.

The Invention in Suit.

(Not claimed by Milton or Podlesak.)

The invention of claims 7 and 8 of the Kane patent has been defined as a unitary oscillating magneto ignition equipment. It is employed upon practically all stationary and portable gasoline engines. For the most part these are the engines of the farm. Hundreds of thousands are purchased yearly.

Generally stated, the invention consists in mounting an oscillating magneto and its igniter and *all* of the constituent and associated co-operating parts of each in and upon a single integral support adapted for attachment to an engine. Before the advent of this invention dry-cell battery ignition was universally used on farm engines. It has been displaced by the Kane invention. The advantages of Mr. Kane's invention are many and important, but need not be discussed in this brief, as the

trial court and the Circuit Court of Appeals have found that the invention defined by claims 7 and 8 is both novel and meritorious.

The Milton and Podlesak patents were applied for and granted after the filing of Mr. Kane's original application. Since they did not claim the Kane invention they amount to nothing more than *publications* occurring after the date of application for Mr. Kane's patent. Patented inventions of merit are as often as not found to have been described in patents and other publications during the considerable interval which almost always elapses between the filing of an application for patent and its grant. This is almost always the case when an invention fills a long-felt want, because interested members of the public use it and discuss it, and sometimes improve it and patent their improvements before the inventor can formulate and secure the allowance of claims covering the nucleus of the later developments. We find no decision prior to the Court of Appeals decision in this case which even suggests that an issued patent can be held invalid merely because its invention is shown and claimed in another patent granted earlier, but applied for *later*. But the Milton and Podlesak patents do not even claim the invention of the claims in suit.

If your Honors will bear in mind that the essence of the Kane invention of claims 7 and 8 resides in mounting *all* of the constituent and associated co-operating parts of an oscillating magneto and its igniter upon an integral support forming part of the combination, it can be determined from a casual inspection of the Milton patent that its claims are *not* directed to this inventive thought. A similar inspection of the Podlesak claims would lead to a like conclusion, but such an inspection of the Podlesak claims is entirely unnecessary, for respondent has always contended, and the Commissioner of Patents and the

Court of Appeals for the District of Columbia have held that the *Podlesak claims are not descriptive of Mr. Kane's device.*

Conclusion.

Our patent statutes have remained substantially unchanged for over forty years. Nearly a million and a half patents have been granted. Almost eight hundred thousand of these have not expired. Thousands of patent suits have been decided. Patents have been assailed upon almost very conceivable ground. It is reasonable to assume that the courts of the United States have considered every defense which can *reasonably* be asserted against the validity of a patent granted under these statutes. When a radically new defense questions the *validity* of a patent granted under these statutes, it should be viewed with suspicion until its soundness has been demonstrated beyond doubt. When it appears that one of the Courts of Appeals has accepted such a defense *without considering* its repugnancy to or harmony with the patent statutes, its decision is presumably in error, and should, without doubt, be reviewed by your Honors. This is especially true in the instant case, because the decision of the Court of Appeals not only defeats the purpose of the patent statutes by refusing to recognize the statutory rights secured by a patent on an admittedly novel invention of great utility, but actually challenges the validity of hundreds of other important patents as well.

Justice and the welfare of our patent system require that the writ prayed for be issued.

Respectfully submitted,

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IN THE

SUPREME COURT OF THE UNITED STATES

No. 93.

OCTOBER TERM, 1923.

WEBSTER ELECTRIC COMPANY,

Plaintiff-Petitioner,

vs.

SPLITDORF ELECTRICAL COMPANY.

BRIEF IN BEHALF OF PLAINTIFF-PETITIONER.

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For Plaintiff-Petitioner.

Eastman Bros., Law Printers, 542 S. Dearborn St., Chicago.

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IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1923.

WEBSTER ELECTRIC COMPANY,

Plaintiff-Petitioner,

vs.

SPLITDORF ELECTRICAL COMPANY.

BRIEF IN BEHALF OF PLAINTIFF-PETITIONER.

Statement.

This case comes up by writ of certiorari directed to the United States Circuit Court of Appeals for the Seventh Circuit. It involves the validity of claims 7 and 8 of Kane patent 1,280,105, and the interpretation of a written contract affecting Podlesak patents, reissue No. 13,878, and No. 1,101,956.*

* Your Honors granted the writ of certiorari primarily to review the findings of the Court of Appeals with respect to Kane's claims 7 and 8. However, the questions pertaining to the Kane patent are so intertwined with the contract matter that your Honors will perceive the necessity for considering the contract matter along with the Kane patent. One of the defenses to the Kane patent is based upon the contract in question. Furthermore, a correct determination of the contract questions (decided in favor of the Webster Company by the trial court) is essential to the very existence of the Webster Company.

All of the inventions here involved were made by employees of the Webster Electric Company, at the solicitation and expense of the Webster Company, with its encouragement, in its factory, and with its facilities.

The Parties.

Webster Electric Company is a corporation of Wisconsin, having its principal place of business at Racine, Wisconsin. Splitdorf Electrical Company is a corporation of New Jersey, doing business at Newark, New Jersey, Chicago, Illinois, and elsewhere.

The original defendants were Splitdorf Electrical Co., respondent here, Sumter Electrical Co.,* and H. J. and T. E. Podlesak. The trial court found the Kane and Podlesak patents to be valid and infringed by the Splitdorf and Sumter Companies. Technical infringement by the Podlesaks was not shown and they were dismissed, but *without costs*, because their connivance with the defendant corporations and betrayal of their employer, licensee and benefactor, the Webster Company, shocked the conscience of the court. (Opinion and decree, R. Vol. 1, pp. 797 and 807.)

The Webster Company (plaintiff) is the pioneer manufacturer of an ignition equipment for internal-combustion engines which aptly may be termed a "*unitary magneto ignition equipment.*" This equipment is covered broadly by the Kane patent and, in its refinements, by the Podlesak patents. At the time of the trial, it had practically superseded all other forms of ignition for single cylinder gasoline engines.

Neither the Splitdorf Company, nor its co-defendant below, the Sumter Company, had anything to do with the

* The Sumter Company was purchased by the Splitdorf Company (R. Vol. 1, p. 491).

development or commercial introduction of the unitary magneto ignition equipment. It was simply appropriated by them after it had been thoroughly developed and after a large and growing demand for it had been created solely through the efforts of the Webster Company.

The Webster Company is the owner of the entire interest in the Kane patent. The courts below have held, and the Splitdorf Company does not deny, that the generic claims (numbers 7 and 8) of this patent have been infringed, if valid.

The Splitdorf Company is the owner, by purchase from H. J. and T. E.* Podlesak, of the *legal title* to the aforesaid Podlesak patents. Obviously, it is estopped to deny their validity. It admits manufacturing and selling the inventions of these patents, but claims a technical *legal* right to do so.

The Webster Company maintains that the manufacture and sale by the Splitdorf Company of the inventions covered by the said Podlesak patents is unconscionable and entirely inconsistent with the terms and spirit of a license contract† (under which the Webster Company has paid and is paying large royalties to the Splitdorf Company) entered into between the Webster Company and H. J. and T. E. Podlesak before the Splitdorf Company acquired any interest in the Podlesak patents.

Legal Questions Presented For Review.

The major question involved is whether or not the Supreme Court decision in *Chapman* v. *Wintroath*, 252 U. S., 126, held or intentionally inferred that a patent for an invention of merit may be destroyed upon grounds

* Sometimes referred to as "Emil" or "Tesla Emil" Podlesak.

† Exhibit D (R. Vol. 1, 52).

heretofore unrecognized by the courts—grounds finding no recognition in the patent statutes.

The Circuit Court of Appeals held Kane's claims 7 and 8 invalid notwithstanding that they cover an invention of merit (as the court held), and were granted in a patent applied for and issued in accordance with what has been the approved practice of the Patent Office since the inception of our patent system.

Kane made his meritorious invention in April, 1909, permitted it to go into widespread public use shortly thereafter, and applied for a patent in February, 1910. This original application* was prosecuted regularly in all respects. In the fall of 1914 the applicant presented claims which the Patent Office ruled should be presented in a divisional application. Such a divisional application† was filed in January, 1915, the *original still pending*. This divisional application illustrated and described the same device as the original application and, according to the established Patent Office practice, always approved by the Supreme Court, was entitled to all of the benefits of the filing date of the original application. This divisional application was prosecuted in the regular way. It went through two long, drawn-out interferences, and finally resulted in the patent in suit on September 24, 1918. Claims 7 and 8 were presented in the divisional application on June 15, 1918.

Counsel for the Splitdorf Company contend, and the Court of Appeals held, that claims 7 and 8 are invalid because not formulated and presented in Kane's divisional application until June, 1918 (that is, until after the invention had been in public use and published in improvement patents to others), notwithstanding that the invention of these claims was always disclosed in Kane's

* R. Vol. 2, 502.

† R. Vol. 3, 623.

applications and regardless of the fact that such applications were always lawfully and vigorously prosecuted by the applicant. The patent statutes recognize no such ground for holding a patent invalid, but the Court of Appeals professed to find authority for so doing in *Chapman* v. *Wintroath*, 252 U. S. 126.

Counsel for Splitdorf Company contend, and the decision of the Court of Appeals infers, that Kane's claims 7 and 8 were granted in waiver or oversight of the rule or doctrine for Patent Office interference practice which was criticized and corrected by the Supreme Court in *Chapman* v. *Wintroath*. Counsel for the Webster Company contend that the rule was not violated in the allowance of claims 7 and 8, but that in no event could the oversight or waiver of such a rule affect the validity of the claims—directed as they are to a meritorious invention of the patentee.

Counsel for the Splitdorf Company contend, and the Court of Appeals held, that Kane's patent is invalid because granted on a divisional application filed more than two years after the occurrence of one or more of the bars (public use, prior patenting, publication) recognized by Sec. 4886 R. S., notwithstanding that the alleged bars admittedly were not applicable to the original application, and regardless of the legal proposition, always approved by the Supreme Court, that a statutory bar not applicable to an original patent application is not applicable to a division thereof.

An ancillary but highly important question presented is whether or not the Splitdorf Company became immune from suit under the Kane patent and certain Podlesak patents (covering refinements of the Kane invention and issued to Emil Podlesak, a Webster employee) when the Splitdorf Company acquired all of the *assignable* rights

of Emil Podlesak and his brother, H. J. Podlesak, under the license contract* which gave the Webster Company the right to enforce the Podlesak patents against its competitors, and which, though it reserved to the Podlesaks "*themselves*" the right to manufacture the inventions of these Podlesak patents, expressly provided that the Podlesaks were not to "*give or grant*" anyone other than the Webster Company a license under those patents.

The trial court held the defendant companies enjoinable for infringement of the Kane and Podlesak patents, but the Court of Appeals held the Splitdorf Company immune from suit under the Podlesak patents without passing upon the contention that the Splitdorf Company is also immune from suit under the Kane patent.

It is to be inferred that the Court of Appeals did not regard the Splitdorf Company as immune from suit under the Kane patent because it considered the defenses directed to the validity of the Kane patent. If it had regarded the Splitdorf Company as in any sense a licensee (immune from suit) under the Kane patent, it is inconceivable that it would have considered the validity of that patent.

Errors Relied Upon.

Petitioner, Webster Electric Company, believes that the decision of the Court of Appeals should be *reversed*, and the decree of the trial court *affirmed*, for the following reasons:

(1) That the Court of Appeals misinterpreted the Supreme Court decision in *Chapman* v. *Wintroath* and erred in holding claims 7 and 8 of the Kane patent invalid in view of that authority.

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* Exhibit D (R. Vol. 1, 52).

(2) That the Court of Appeals erred in holding (contrary to the opinion of the trial judge) that the reserved right to the Podlesaks "themselves" to manufacture and sell the inventions of the Podlesaks patents in suit was or could be assigned to the Splitdorf Electrical Company and its co-defendant, Sumter Electrical Company.

Chronological Outline of the Facts.

In 1905, Webster Manufacturing Company, under the presidency and guidance of Mr. T. K. Webster, was manufacturing grain elevators, conveying machinery, and gas engines. At that time batteries were almost universally used for gas engine ignition but were the source of endless trouble (R. Vol. 1, 510). In connection with his business, Mr. Webster learned of certain Curtin patents for a magneto generator, and he purchased those patents with the intention of trying to develop magneto ignition (R. Vol. 1, 341, 508). John L. Milton was also interested in this subject and when he learned that Mr. Webster controlled the Curtin patents, he went to Mr. Webster and asked for and was granted opportunity to work with Mr. Webster in the development of magneto ignition (R. Vol. 1, 341, 508, 510).

Milton went to work and constructed numerous magnetos which, though they were good magnetos (current producers), could not successfully be used for ignition purposes. In 1908 it developed that most of Milton's work on such magnetos had been anticipated by two brothers, H. J. and T. E. (Emil) Podlesak, who owned certain patent applications which promised to result in patents dominating all of Milton's work up to that time. Mr. Webster overcame this obstacle by taking a license under the Podlesak applications and agreeing to pay the Podlesaks a royalty (Exhibit A, R. Vol. 1, 39). Neither

of the Podlesaks became associated with the Webster Company at this time. Later, *after* Kane had produced the Unitary Magneto Ignition Equipment, Emil Podlesak went to work for the Webster Electric Company on August 10, 1909.

After four years of struggle and experiment, Webster Electric Company (which had been formed to separate the ignition business from the other business of the Webster Manufacturing Company) by the spring of 1909 had developed an oscillating magneto. That magneto, though the best that Milton could develop out of his own ideas and those of the Podlesaks, was entirely unsatisfactory for its purposes. The only customer to whom Webster Electric Company was supplying this magneto was the International Harvester Company, and, as Mr. Webster testified, the whole magneto business at that time was in flux. Engine builders were using batteries but they wanted magnetos, and many concerns were trying to develop a satisfactory magneto equipment. The only reason why the struggling Webster Electric Company kept the Harvester Company business was because the magneto of the Webster Company, unsatisfactory as it was, was the best machine on the market at that time. But it was so entirely unsatisfactory that on March 15, 1909, the Harvester Company reached the conclusion to discard the Webster magneto (R. Vol. 1, 342, 345, 513, 514, Vol. 2, page 1).

Mr. Webster, being a man of perseverance and determination, was not to be defeated. He called upon his employees, among others Kane and Chiville, who were familiar with the many troubles confronted by the company, to attempt to redesign the Webster ignition equipment so as to retain the Harvester business and thus save the struggling Webster Electric Company (R. Vol. 1, 346, Vol. 2, 121).

Kane's efforts in April, 1909, resulted in the invention of the Unitary Magneto Ignition Equipment. This equipment revolutionized ignition for single cylinder engines, saved the Harvester business, and started the Webster Electric Company on the road to success. **Kane's Unitary Magneto Ignition Equipment was the first practical and commercially successful magneto ignition equipment for single cylinder gas engines** (R. Vol. 1, 348, 235, Vol. 2, page 3).

Although the Kane invention was really the starting point of the Webster Company's success, the first few years following that invention were years of continued struggle to popularize magneto ignition against the handicap of the preceding years of failure. But by 1915 the tide had turned; the sales jumped to 46,444 equipments in that one year, and grew steadily thereafter until in the year 1918 alone (the year before the trial), the Webster Company sold 129,785 equipments (R. Vol. 1, 474).

Mr. Webster, of course, did not cease his efforts with the making of the Kane invention, but continued to develop the Kane equipment to its present state of perfection. Among other engineers whom he employed in this development was Emil Podlesak, who entered the employ of the Webster Company in August, 1909, after the company had commenced the commercial manufacture of the Kane equipment. Podlesak, as did others, improved some details of the commercial device of the Webster Company, but the basis of all this work and of the almost universal present day use of magneto ignition for single cylinder engines was the Unitary Magneto Ignition Equipment, the invention of which by Kane had enabled the Webster Company to survive in 1909 (R. Vol. 1, 349, 411, 416).

It is important to bear in mind a definite distinction between the Podlesak *magneto* inventions, under which

the Webster Company took a license in 1908, and the improvements on the Kane *ignition equipment* which Emil Podlesak made subsequent to August, 1909, *while in the employment of the Webster Company.*

Emil Podlesak's refinements of Kane's generic invention, made by Podlesak while an employee and officer of the Webster Company, were added by Podlesak to the Webster Company's commercial device from time to time. Not until 1914 did the Webster Company see any necessity for any rights to these improvements other than the mere "shop rights" which the relations of the parties created. In February, 1914, these "shop rights" were enlarged and set forth in a written contract (here in suit, R. Vol. 1, 52), which gave the Webster Company the right to prevent competitors from making or selling the Podlesak improvements on the Kane equipment.

In 1910 and 1911 the Sumter Electrical Company (a defendant below and now absorbed by the Splitdorf Co.) was manufacturing an oscillating magneto somewhat similar to the old Webster magneto (Pltf.'s Ex. 13)* which was condemned by the International Harvester Company in 1909 (Pltf.'s Ex. 24)*, and which had been replaced by Kane's generic invention. The Sumter oscillating magneto, like the Webster magnetos which preceded Kane's invention, was unsuccessful. Commencing about 1912, the Sumter Company, while devoting itself to the manufacture of *rotary* magnetos, launched upon an advertising campaign in opposition to oscillating magnetos in general, and to the Webster equipment in particular, but it was unable to oppose the public demand for the Webster equipment (Pltf.'s Ex. 25, 26, 28, 32)*.

The Webster Company, fully aware that its increas-

* These are booklets offered as physical exhibits. Pertinent excerpts are reproduced on pages 36 to 41 of the addendum to this brief.

ing success would prove a temptation to the Sumter Company, took steps in February, 1914, to protect itself against piracy. No patent had yet issued to cover the fundamental invention of 1909, but several patents had issued covering Podlesak's refinements of the Kane invention. Among the Podlesak patents which had issued at that time was patent No. 1,055,076, dated March 4, 1913, which was subsequently reissued as No. 13,878 (in suit). Also expected was the early issuance of the starting lever patent No. 1,101,956, issued in June, 1914 (also in suit). The Webster Company therefore proceeded to fortify itself against the Sumter Company by securing the right to prevent competitors from appropriating the inventions of the Podlesak improvement patents.

On February 5, 1914, the unwritten "shop rights" which the Webster Company had theretofore enjoyed under the Podlesak improvement patents were set forth in a written contract (Ex. D—R. Vol. 1, 52), known as the "shop right agreement," which clothed the Webster Company with the power to exclude competitors from infringing the Podlesak improvement patents and gave the Webster Company the right to institute and maintain infringement suits for that purpose. The agreement, in the third paragraph of its preamble, stated that the Webster Company was desirous of securing the right

> "to bring and maintain suits against infringers of the patent rights covering the said inventions."

This right to bring and maintain suits against infringers was expressly given in the second granting clause of the agreement which, after setting forth that the Podlesaks* would aid and assist each other, "in any suit or

* The Podlesak brothers were "parties of the first part." They had contracted jointly to own all the Podlesak patents relating to magnetos and ignition equipments (R. Vol. 1, 44).

proceeding brought under any of said patents" provided as follows:

> "The parties of the first part (Podlesaks) hereby appoint the attorneys for the party of the second part (Webster Company) as their agent and attorney for the purpose of joining them as parties complainant where necessary or desirable, in any suit which the party of the second part (Webster Company) may wish to bring on account of the infringement of any of said letters patent."

The Podlesaks desired to retain a personal right to make, use and sell devices embodying the inventions in question, but the possibility of this reserved right being transferred to any competitor of the Webster Company was guarded against in the first of the granting clauses of the agreement, which provided

> "that they (Podlesaks) *will not*, while this shop license to the party of the second part (Webster Company) is in force, *give or grant* shop licenses to others to make, use or sell herein said inventions, expressly *reserving*, however, the right to *themselves* to make, use and sell the herein said inventions."

Endowed with the power to enforce the Podlesak improvement patents against all competitors save the brothers Podlesak (and they did not promise to be and never have been competitors), and the Podlesaks having agreed not to "*give or grant*" licenses to its competitors, the Webster Company believed itself to be prepared for the day when the Sumter Company or any other competitor, might yield to the temptation to pirate the unitary magneto ignition equipment.

In 1914 the Webster Company's sales were 11,458 equipments, but in 1915 the sales jumped to 46,444. This rapidly widening market for ignition equipments of the type originated by Kane and refined by Emil Podlesak was too strong a temptation for the Sumter and Splitdorf Companies. In the middle of 1915 the Sumter Com-

pany simply pirated the unitary magneto ignition equipment, and the Splitdorf Company purchased the Sumter Company (Pltf.'s Ex. 41, R. 491)*.

The Podlesak brothers promptly requested the Webster Company to bring suit against the Sumter Company for its infringement of the Podlesak improvement patents, as the Webster Company was empowered to do under the contract of February 5, 1914. A bill of complaint was sworn to by Emil Podlesak on August 3, 1915, and suit was commenced against the Sumter Company on August 21, 1915, at Charleston, South Carolina (R. Vol. 2, 35). The parties plaintiff were Webster Electric Company and the brothers Podlesak.

The Sumter and Splitdorf Companies, however, believing that the great demand for the Webster equipment justified any means which would enable them to pirate the market, seduced the Podlesaks; the very day before the bill of complaint was filed, they secured from the Podlesaks, wholly unknown to the Webster Company, an option to buy all of the Podlesak patents and their contracts with the Webster Company (R. Vol. 1, 497).

This option eventuated in the contract (Ex. F to the Bill of Complaint, R. Vol. 1, 60) of September 4, 1915, between the Sumter and Splitdorf Companies and the Podlesaks. At the time of the hearing in the Court of Appeals, the Splitdorf and Sumter Companies had received over $112,000 in royalties from the Webster Company, while they paid the Podlesaks only $65,000 for the assignment of the contracts.

Following their seduction of the Podlesaks, the Splitdorf and Sumter Companies took the position that they were immune from suit under the Podlesak improvement

* This is a booklet introduced as a physical exhibit. Pertinent excerpts therefrom are reproduced on pages 43 to 49 of the addendum to this brief.

patents and entitled to *control* any litigation thereunder, and called upon the Webster Company to dismiss not only the South Carolina suit, but also other litigations which the Webster Company had instituted against strangers to any of the contracts. The Webster Company replied by dismissal without prejudice (R. Vol. 2, 46) of the South Carolina suit and the filing of the present suit against the Sumter and Splitdorf Companies and the two Podlesak brothers, jointly.

Following the institution of this suit on October 12, 1915, the Webster Company and the Splitdorf Company became involved in a Patent Office interference involving the Podlesak reissue patent No. 13,878, and the application of Kane which eventuated in the Kane patent in suit which covers the unitary ignition magneto equipment broadly.

This interference did not terminate until May, 1918. The Kane application issued on September 24, 1918, as patent No. 1,280,105, which was promptly included in the present suit by an original bill in the nature of a supplemental bill (R. Vol. 1, 184).

The Unitary Magneto Ignition Equipment.

(Its Relation to the Single Cylinder Engine.)

The single cylinder gas engine—sturdy, and moderately priced—had taken a most important role in the drama of American progress. It performs the drudgery of the nation. It saws the wood, pumps the water, churns the butter, drives the concrete mixer—in short, performs a thousand and one tasks for people in all walks of life. This hard-working engine—there are hundreds of thousands of them in use—comprises in its makeup one organism which must function unfailingly and with absolute precision. This is the *ignition equipment* which furnishes the vital

spark, without which no ordinary gas engine can operate. At a very early date, ignition became *the* serious problem which prevented the single cylinder gas engine from attaining its present importance. Whosoever could devise a satisfactory ignition equipment for this type of engine would achieve distinction and financial reward for himself, and would enable the single cylinder engine to come into its own.

The ignition problems involved in the operation of a single cylinder gas engine are radically different from the ignition problems pertaining to an automobile or other multiple cylinder engine. The single cylinder engine is used on the farm, in the forest, on the highways, and in many other places remote from shops and mechanics. It is usually in charge of a laborer whose knowledge of electricity and magnetos is most meagre. Such engines are seldom protected from the weather. Often they stand exposed to the elements for months at a time. For purposes of economy they usually burn low grade fuel which will quickly foul and render useless the "spark plugs" commonly used with other types of engines.

For these reasons, and others which have been discussed by the witnesses in this case, ignition for single cylinder engines has developed along lines widely divergent from ignition for automobile and other multiple cylinder engines. The automobile and other multiple cylinder engines are universally equipped with various forms of the "high tension" or "jump spark" type of ignition with which this controversy is in no way concerned. In connection with single cylinder engines, we now just as universally use a "low tension" or "make and break" type of ignition incoporated in the *Unitary Magneto Ignition Equipment*. The history of the Unitary Magneto Ignition Equipment centers entirely around the Webster Electric Company.

Sponsored by T. K. Webster—Invented by Kane—Refined by Podlesak.

Mr. T. K. Webster was not a designer or inventor of ignition devices, but he was of the type of men who have made ours the most progressive of nations in the development of the useful arts. At an early date he had the perception to realize the need for an individualistic type of ignition for single cylinder engines, the vision to foresee the possibility of its creation, the ability to select, direct and encourage engineers and mechanics engaged to accomplish his purpose, and the courage persistently and for years to pursue his objective to accomplishment despite most vexatious discouragements.

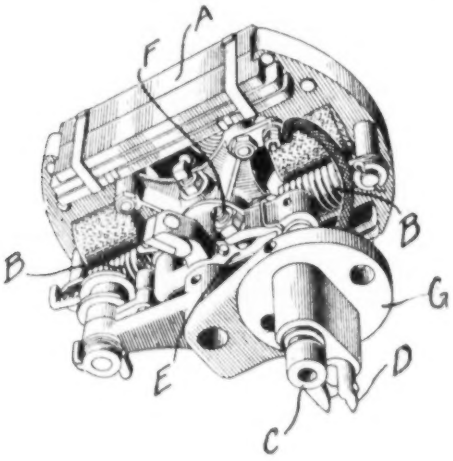
In a broad sense, the Unitary Magneto Ignition Equipment is the creation of Mr. T. K. Webster. In a narrower sense, it represents the sum total of the best efforts of three engineers who along with many others worked for the Webster Company under the guidance of Mr. Webster in the decade from 1905 to 1915. These engineers were John L. Milton, Edmund J. Kane, and Emil Podlesak. As an inventor, the greatest of these was *Kane*.

Kane, a young man recently out of college and not in the rut of his predecessors, produced the Unitary Magneto Ignition Equipment when the more experienced Milton and all of his associates had failed to provide a satisfactory ignition equipment after four years of continuous effort. Podlesak, an experienced designer, and a competent factory manager, added certain meritorious refinements to the equipment which Kane produced.

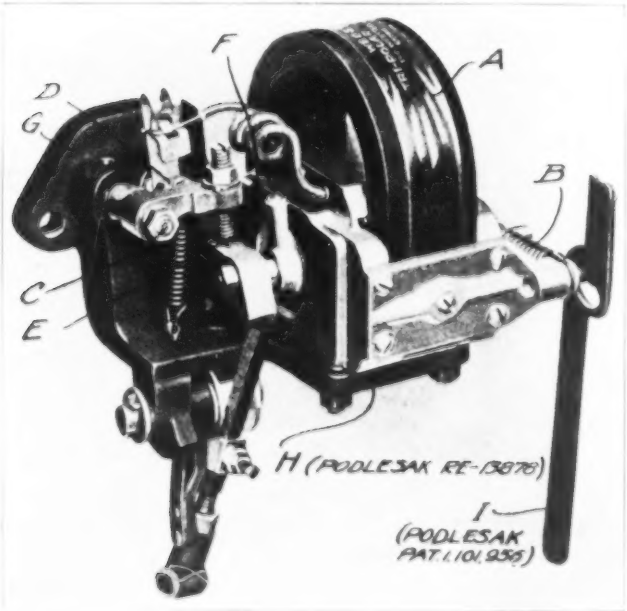
Strictly speaking, Milton had nothing to do with producing the Unitary Magneto Ignition Equipment. He did contribute much to the perfection of a specific type of tri-

Kane's Unitary Construction.

ALL OF the mechanism is mounted upon a single supporting member having a single attaching part G.



The Original Form Patented by Kane.



Plaintiff's Commercial Form of the Kane Invention.
(Embodying Poolesak Improvements.)

polar inductor magneto (current generator) which *may*, and in the devices of the Webster Company does, form a *part* of the Unitary Magneto Ignition Equipment. But Milton's magneto is not an indispensable part of that equipment. Other specific types of magneto may be substituted for it. In fact, that is just what has been done by the Splitdorf Company.

Kane invented and constructed the first Unitary Magneto Ignition Equipment which was ever given to the public. Emil Podlesak, while an employee and officer of the Webster Company, contributed improvements to that which Kane had produced. Kane was a pioneer. Podlesak, though he did good work was a mere improver of Kane's pioneer invention.

The Unitary Magneto Ignition Equipment.

(From a Structural Point of View.)

Since both of the courts below have definitely held that claims 7 and 8 of the Kane patent describe a meritorious invention, most of our comments with respect to the *merits* of the Kane invention have been relegated to the addendum to this brief. However, there are certain structural characteristics of the Unitary Magneto Ignition Equipment which your Honors should have clearly in mind in considering some of the novel defenses which counsel for the Splitdorf Company will urge against claims 7 and 8 of the Kane patent.

Opposite this page are cuts illustrating the Unitary Magneto Ignition Equipment in the original form in which it was invented by Kane and put upon the market by the Webster Electric Company in 1909 and in the refined form (including Podlesak's improvements) which it had attained when this suit was instituted in 1915.

Similar reference characters have been applied to corresponding parts in the two forms of the equipment.

The Unitary Magneto Ignition Equipment, in each of the illustrated forms, comprises a magneto generator A, driving springs B, relatively movable electrodes C and D, devices E and F whereby the electrodes are separated at a predetermined point in the movement of the movable element (rotor) of the magneto generator, and an igniter block G, attached to the engine by bolts extending through apertures *g*, the igniter block constituting a single mounting means for **ALL** of the aforesaid mechanism.

The importance of this one-group construction is due to the fact that the proper ignition of the explosive mixture in an internal combustion engine is absolutely essential to its operation, and that the ignition of the explosive charge is prevented whenever the spark electrodes become foul. There is unpreventable deposit of carbon upon these electrodes and the block in which they are mounted. As explained by the experts, it is necessary not merely occasionally, but frequently, to clean the carbon deposit from the electrodes and exposed end of the igniter block. To do this, it is necessary to remove the igniter block with its electrodes from the engine cylinder.

With Kane's unitary or one-group equipment, the inexpert operator of an engine can and does remove the entire equipment whenever the spark electrodes require cleaning. The carbon may be scraped or brushed from the electrodes and the igniter block in which they are mounted, and the entire ignition mechanism may be returned to its position upon the engine without changing or destroying for one instant the mechanical relationships between all of the parts, the accuracy of whose adjustment is essential to the operation of the ignition equipment.

In order to determine whether the cleaning of the electrodes has removed any particle of carbon which may have effected a fatal short circuit, the operator has merely to cock and release the rotor of the generator while removed from the engine in order to observe whether the requisite "fat" spark is produced between the electrodes. If the spark is of the proper character, the magneto equipment is replaced upon the engine with the certainty that it will produce identically the same spark when actuated by the push rod of the engine as when cocked and released in the hands of the operator.

If after cleaning the electrodes, the hand operation of the mechanism does not effect the production of a fat, hot spark between the electrodes, then the inexpert user of the engine may change his adjustments one way and the other until the hottest, fattest possible spark is produced. By cocking and releasing the rotor of the generator, while holding the unitary and completely assembled equipment in his hands, he can see and determine by his eye alone when the best adjustment is secured. If, on the contrary, the ignition equipment could be made to function only when assembled upon the engine (as was the case with all of the various equipments which preceded Kane), then it would be impossible to observe the character of the spark, because the electrodes in that case would be concealed within the cylinder of the engine. Under such circumstances, the character of the ignition spark could be determined only by the use of elaborate electrical measuring instruments, with which, of course, the ordinary user is not supplied; or by cranking the engine in an effort to make it run, followed by repeated removals and adjustments of the equipment. Long continued cranking of an engine which refuses to start, in order to test such repeated readjustments, is a task of exasperating difficulty.

The structural characteristics which distinguish Kane's unitary equipment from every one of the invariably unsatisfactory magneto equipments which preceded it, and the advantages which, as early as 1918, made this equipment the universal standard on over 80% of all single cylinder engines manufactured in the United States, are clearly and definitely set forth in Kane's claims 7 and 8, which read as follows:

> "7. In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an engine cylinder, spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, a **RIGID UNITARY AND INTEGRAL SUPPORT UPON WHICH ALL OF THE AFORESAID PARTS ARE MOUNTED**, whereby **ALL** of said parts may be removed from and returned to their position upon an engine cylinder without disturbing their relations one to another, conductors for carrying electric current from said generating winding to said electrodes, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it.
>
> "8. In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an engine cylinder, spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, a **SUPPORTING MEMBER** upon the several parts of which **ALL** of the aforesaid mechanism is mounted and having a single integral part adapted to be attached to the

engine, whereby **ALL** of said mechanism may be removed from the engine by removing said single integral part and may be returned to its position upon the engine with unchanged relations between any and all of the parts of all of said mechanism, thereby insuring the predetermined synchronism and inter-related adjustment of said mechanism when it is replaced upon the engine, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it."

If your Honors will bear in mind that the essence of the Kane invention of claims 7 and 8 resides in mounting **ALL** of the constituent and associated co-operating parts of an oscillating magneto and its igniter upon a rigid support forming part of the combination, you cannot possibly be misled into the belief that Milton or Podlesak ever *claimed* Kane's fundamental invention.

We do not believe that the validity of Kane's claims 7 and 8 would have been affected in the least if Milton or Podlesak (neither being the inventor of the subject-matter) had claimed Kane's real invention in their patents which happened to issue before his. But the fact is that they *did not* claim it.

Referring again to the cut of the Webster Company's commercial equipment which appears opposite page 17, *ante*, we shall explain that Emil Podlesak's most important refinements of the Kane equipment consisted, *firstly*, in substituting a horseshoe magnet type of magneto for the straight bar magnet machine which Kane had originally used, and in providing the equipment support with a flat base or *shelf* H integral with the igniter block G upon which the horseshoe magnet type of magneto rests, and, *secondly*, in providing the machine with a lever I which facilitates adjusting and testing the equipment off the engine, and is also useful in operating the magneto to give an initial spark for starting the engine. These refinements are covered respectively by the Podle-

sak patents, reissue 13,878, and 1,101,906, both here in suit.

There may exist a question as to whether the substitution by Podlesak of the horseshoe magnet machine for the straight bar magnet machine, the provision of the shelf, etc., as shown by reissue 13,878, involved invention as distinguished from the skill of an expert mechanic. These improvements are important from the standpoint of manufacturing cost and convenience. The testing and starting lever, covered by patent 1,101,906, is an improvement of higher order. But the validity of these patents is not in question. The Splitdorf Company admits estoppel to deny validity of either of them. Nor does it deny that it has made and sold ignition equipments covered by the claims of these patents.

Milton's Duplicity.

John L. Milton, whose failures had been turned into success by Kane in 1909, apparently felt chagrined at Kane's accomplishment. He did not question Kane's inventorship at the time the invention was made, but evolved an insidious plan for securing to himself the benefits of Kane's invention. It was not difficult for him to prevail on Mr. Webster, who left the decision in patent matters to Milton and other associates, to advise Kane that his invention was unpatentable (R. Vol. 1, 256). Milton then, secretly, on October 28, 1909, applied for a British patent covering Kane's invention (R. Vol. 3, 397). Possibly he applied in Great Britain, and not at that time in the United States, because the British patent law, unlike that of the United States, does not require an applicant for patent to make oath as to his inventorship. At any rate, he filed in Great Britain on October 28, 1909, and then exactly one year later filed in

the United States an application which eventuated in his patent No. 1,096,048, dated May 12, 1914 (R. Vol. 3, 866). He applied for the United States patent through the Webster Company's attorneys and later sold a number of his patents, including this one, to the Webster Company for $25,000. Mr. Webster testified that he bought Milton's patents on the advice of his attorneys (who knew nothing of Milton's duplicity) and that he did not know what Milton's patents purported to cover; that he was advised to buy them, and that he did so (R. Vol. 1, 352).

The Kane-Milton Interference.

The inventor Kane was not convinced that his unitary equipment was not patentable and on the advice of his father (R. Vol. 1, 256, 310) he filed on February 2, 1910, an application (R. Vol. 2, p. 501) through the office of Mr. Sprinkle, a Chicago patent attorney. The Webster Company knew nothing about the filing of this application. Kane left the Webster Company in the fall of 1910 (R. Vol. 1, 240). Mr. Sprinkle's firm prosecuted this Kane application without any success, so far as securing the allowance of claims was concerned, until Milton's patent issued on May 12, 1914. Kane noticed the Milton patent in the "Official Gazette" of the Patent Office, and his attorneys promptly presented Milton's claims in the Kane application, and proposed to contest the question of priority with Milton. But the Patent Office required that Kane present Milton's claims in a so-called divisional application which was duly filed on January 14, 1915. An interference was declared between Kane and Milton, Kane being the senior party by virtue of his original filing date of February 2, 1910, Milton's United States application having been filed on October 28, 1910. The Web-

ster Company's attorneys, believing Milton to be the real inventor, had the burden of proof in the interference placed on Kane by moving that Milton be given the benefit of his British filing date (R. Vol. 2, 411).

But when the Webster Company's attorneys commenced to look for evidence to support Milton's side of the interference, they found, as later did Judge Sanborn in this case, that Kane, and not Milton, was the actual inventor. There was nothing for the Webster Company to do but to buy Kane's rights, which it did for $12,000 in April, 1916 (R. Vol. 1, 372).

The Kane-Milton interference was terminated by an award of priority to Kane. The Webster Company does not in any way rely upon the Patent Office decision in the Kane-Milton interference because the proceedings necessary to bring about a proper termination of the interference were handled solely by its attorneys. To the contrary, the Webster Company offered in this suit evidence which (as Judge Sanborn said) proves "*overwhelmingly*" that Kane, and not Milton, was the original inventor.

The Kane-Podlesak Interference.

Another interference, the Kane-Podlesak interference involved the Kane application filed January 14, 1915, which was a division of the original application filed February 2, 1910, and also the Podlesak reissue patent granted on February 9, 1915. (See Defendant's Exhibit 56, R. Vol. 3, 940.) The original Podlesak patent No. 1,055,076, granted March 4, 1913, contained no claims relating in any way to the unitary magneto ignition equipment. On February 9, 1915, however, the Podlesak patent was reissued as No. 13,878. The claims which appeared for the first time in the reissue patent were directed to those improvements in the Kane equipment which Podlesak ad-

mittedly did not make until he entered the employ of the Webster Electric Company and *after* the Kane equipment was on the market (R. Vol. 1, 411). Those new claims, however, were so phrased as to seem susceptible of being interpreted to cover more than the Podlesak improvements. In order to make sure that the new claims of the Podlesak reissue patent were limited to the Podlesak improvements and were not broad enough to cover the Kane invention, Kane's personal attorneys inserted the new claims in his divisional application on April 19, 1915, and asked for an interference with the Podlesak reissue patent (R. Vol. 2, 634). Webster Electric Company had no interest in the Kane application until a year later (R. Vol. 1, 217). At the same time Kane's personal attorneys inserted three other claims that were repeated in the Podlesak reissue patent from the original patent and which, in the light of the reissue, seemed to take on new significance. These three claims, however, were discarded and were not involved in the final decision of the interference.

Since the Kane divisional application was based on precisely the same disclosure as the original application filed February 2, 1910, and since Podlesak admitted in his preliminary statement that he did not invent his improvements until November, 1910, the Examiner ruled that judgment would be entered for Kane on the record unless Podlesak showed cause to the contrary. In reply Podlesak moved to dissolve the interference on the ground that the new claims in the Podlesak reissue patent were strictly limited to Podlesak's detailed improvements on the underlying Kane invention, and on the further ground that Kane was estopped to make the claims because he had delayed too long in asking for them. Podlesak's motion was denied and an order of priority in favor of Kane was entered by the Examiner of Interferences.

In successive appeals by Podlesak or Kane, no two tribunals of the Patent Office agreed on any point involved and the case finally came before the Court of Appeals for the District of Columbia. That court held that if it were necessary, it would agree with the Commissioner's decision that the new claims in the Podlesak reissue patent were limited to the details of the Podlesak improvements. But following the authority of its own then very recent decisions in *Rowntree* v. *Sloan*, 45 App. D. C. 207, and *Wintroath* v. *Chapman*, 47 App. D. C. 428, it placed its decision in favor of Podlesak, however, on the ground that Kane was estopped to make the claims because he had not presented them until two years and one month after the issue of the original Podlesak patent. Such was the ruling despite the fact that these claims did not appear in the original Podlesak patent, and despite the fact that Kane made them within two months after the grant of the reissue patent in which the claims appeared for the first time. This decision, of course, was made before the Supreme Court reversed the decision in *Wintroath* v. *Chapman*.

Patent Claims Involved.

The following claims are involved:

Kane patent No. 1,280,105, claims 7 and 8*.

Podlesak reissue No. 13,878, claims 1, 2, 3, 7, 8, 9, 15, 21 and 22.

Podlesak patent No. 1,101,956, claims 1, 2, 3, 6, 7, 11 and 12.

The respondent (defendant) does not deny that claims

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* Judge Sanborn found claim 3 of the Kane patent valid and infringed, but the Court of Appeals found it not infringed without disturbing its validity. We believe Judge Sanborn was right, and the Court of Appeals wrong, but claim 3 is relatively unimportant, not being directed to the essence of Kane's invention. Hence, to simplify the issues, we shall not discuss its infringement in this brief.

7 and 8 of the Kane patent are infringed, if valid. Neither does it deny that the Podlesak claims are valid and descriptive of devices made and sold by the defendant.

Respondent's Contentions.

The Splitdorf Company urged many defenses in the courts below but the only ones which were considered by the courts below, or which we can conceive the respondent will urge in this court, are as follows:

1. *That the doctrine governing patent office interference practice which was criticized and corrected by the Supreme Court in Chapman* v. *Wintroath, 252 U. S. 126, and the language employed by Mr. Justice Clarke in that decision, afford grounds for vitiating claims 7 and 8 (the generic claims) of the Kane patent.**

NOTE: The Court of Appeals has held claims 7 and 8 of the Kane patent invalid because the Court of Appeals believes Kane did not present his divisional application, or perhaps more particularly claims 7 and 8 thereof, in compliance with the aforesaid doctrine, and because the said Court of Appeals thought it found in the language of Mr. Justice Clarke justification for holding claims 7 and 8 invalid merely because not formulated and submitted to the Commissioner of Patents until rather late in the course of a long but most vigorous prosecution of the application which eventuated in the Kane patent.

The holdings of the Court of Appeals in this connection are most startling, and if correct will invalidate a very large percentage of all United States patents now

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*See page 46, *infra*, for an enumeration of the novel defenses under this heading.

in existence. The writ of certiorari to review these holdings was wisely invoked by your Honors.

Counsel for the Splitdorf Company, in reply to the petition for certiorari, endeavored to lead your Honors to believe that the holding of the Court of Appeals, that Kane's right to claims 7 and 8 was barred by laches in their formulation and submission, was based, not on *Chapman* v. *Wintroath, supra,* but, to the contrary, upon *Railway Company* v. *Sayles,* 97 U. S., 554. The Court of Appeals *did not even mention Railway Company* v. *Sayles* in its opinion. Its decision was based solely upon what it conceived to be the law announced by the Supreme Court in *Chapman* v. *Wintroath* (252 U. S. 126).

Counsel for the Webster Company believe that the Court of Appeals incorrectly construed your Honors' decision in *Chapman* v. *Wintroath,* and fell into error through failure to consider the *patent statutes* and such Supreme Court cases as *U. S.* v. *American Bell Telephone Co., et al.,* 167 U. S., 224.

2. That claims 7 and 8 of the Kane patent are void for lack of patentable invention.

NOTE: This contention has been rejected by both of the courts below.

3. That the Webster company is estopped, by contract D, from asserting the Kane patent against the Podlesaks and their assignees.

NOTE: This alleged defense to the Kane patent was not recognized by either of the courts below. Its consideration demands an *interpretation* of the contract here in issue.

4. That John L. Milton (another employee of the Webster Company) was the originator of the invention of the Kane patent.

NOTE: The trial court rejected this contention in most forceful language, saying "the proof shows that Kane

is *beyond reasonable doubt* the first inventor." The Court of Appeals did not disturb this finding of fact.

5. That the Splitdorf Company and its co-defendant, the Sumter Company, are immune from suit under the Podlesak patents.

NOTE: The trial court found this contention to be entirely without merit, but the Court of Appeals was impressed by and gave it sanction.

The decision of the Court of Appeals on this phase of the case deprives the Webster Company of every right which it ever sought or needed under the Podlesak patent 1,101,956 and reissue 13,878, and has placed it in a deplorable situation where its only formidable competitor, the Splitdorf Company, may sap its vitality and destroy it.

The Court of Appeals has admitted that its only opinion (the first opinion), in which this phase of the case was considered, was largely in error. We feel that the conclusions of the Court of Appeals on the contract question were as ill considered as were its conclusions, set forth in the same opinion, with respect to the question of patentable novelty.

The decision of the Court of Appeals with respect to the contract question should be reviewed along with the questions pertaining to the Kane patent.

First: Because the contract question is a simple one but most vital, so far as the existence of the Webster Company is concerned.

Second: Because, on the face of the record, the presumption in favor of the correctness of the trial court's decision is greater than that in favor of the decision of the Court of Appeals.

Third: Because a determination of the contract question will not require your Honors to consider any disputed facts.

The Opinions of the Courts Below.

The Opinion of the Trial Court.

(R. Vol. 1, 797.)

The trial of this case occupied upwards of two weeks. The court had the benefit of full arguments on each side. Three counsellors presented the case of the defendant corporations.

The trial judge, the late Arthur L. Sanborn, saw and heard all of the witnesses and had ample opportunity carefully to consider the evidence and arguments and to arrive at his conclusions. His findings of fact should be regarded as conclusive. His conclusions with regard to matters of law are entitled to the greatest respect because of his great experience and generally recognized ability, and because of the unusual opportunity which he had to consider and decide the questions involved in the instant case.

Judge Sanborn in a carefully considered opinion resolved all of the material issues against the defendant corporations. He found claims 7 and 8 of the Kane patent valid and infringed, determined that the defendant corporations had infringed the Podlesak patents, No. 1,101,956, and reissue No. 13,878, and found them enjoinable from such infringement.

The Opinions of the Court of Appeals.

(First opinion, R. Vol. 1, 835—Second opinion, R. Vol. 1, 918.)

Two hearings were had in the Court of Appeals, and two opinions were rendered by that court.

The Court of Appeals and counsel were unquestionably handicapped by the size of the record herein and

the relatively short periods available for oral argument.

In its first opinion, the Court of Appeals found claims 7 and 8 of the Kane patent invalid *for want of invention*, and held the Splitdorf Company to be immune from suit for infringement of the Podlesak patents, No. 1,101,956 and reissue No. 13,878.

A rehearing was sought and granted, but was limited to the issues involving claims 7 and 8 of the Kane patent. In its second opinion, the Court of Appeals *admitted error* in its first opinion, found that claims 7 and 8 of the Kane patent do describe *a meritorious invention*, but then, to the consternation of the Webster Company, and we think to the great surprise of all counsel concerned, proceeded to hold these claims void for reasons hitherto unrecognized in American patent litigation!

The second opinion of the Court of Appeals finds claims 7 and 8 of the Kane patent void, *firstly*, because Kane failed to file his *divisional* patent application soon enough after the grant of one of the Podlesak patents which disclosed but did not claim the invention of claims 7 and 8 of the Kane patent; and, *secondly*, because Kane did not (and we shall show could not) formulate and present claims 7 and 8 to the Patent Office until after his invention had been in public use for some years.

The Court of Appeals professes to find authority for these holdings in the Supreme Court decision in *Chapman* v. *Wintroath* (252 U. S. 126).

With reference to Kane's supposed failure to file his *divisional application* in time, the Court of Appeals said:

> "Kane's original application for patent No. 1,204,573 was filed **February 2, 1910** and was allowed November 14, 1916. The divisional application was filed **January 14, 1915** and allowed September 24, 1918. Milton's patent No. 1,096,048

was applied for October 28, 1910 and allowed May 12, 1914. . . . .

"The Podlesak reissue patent No. 13,878 was issued February 9, 1915, upon application filed December 23, 1914, the original patent being No. 1,055,076, issued **March 4, 1913.** . .

"In support of the contention that section 4886 R. S. requires a divisional application to be filed within two years from the allowance and publication of a patent covering the same claims, appellant cites *Chapman* v. *Wintroath*, 252 U. S. 126. Subsequent to the filing of the original brief, the following additional authorities were submitted, all based upon the views expressed in *Chapman* v. *Wintroath*. *De Ferranti* v. *Harmatta*, 273 Fed. 357; *Ransdall* v. *Jahns*, 273 Fed. 365; *Repogle* v. *Kirby*, 269 Fed. 862; *Wells* v. *Honigman*, 267 Fed. 743. Our attention has been called to no case holding the contrary and we have found none upon independent investigation.

"True, the precise question here presented was not squarely raised and therefore not decided in *Chapman* v. *Wintroath*. In that case the divisional application was denied (no hearing was had and no evidence was received) solely on the ground that it was not made within *one year* from the date of the allowance of a patent covering the same claims to another. Appellants contend, however, and we agree with the courts that have passed upon the question that the effect of the holding, is to fix the period, during which such **application** must be filed, at two years from the date of the issuance of the **other patent.** No other deduction can fairly or logically be drawn from the discussion of the question in that opinion." (Bold face ours.)

The Court of Appeals applied the "two year rule" to the instant case upon the false premise that **two years** elapsed between **March 4, 1913,** and **January 14, 1915.** Kane's divisional application was filed on **January 14, 1915,** well within TWO YEARS after the grant of the **other patent** disclosing the Kane invention. The **other patent** to which the Court of Appeals referred was the

original Podlesak patent, No. 1,055,076, issued **March 4, 1913**, which was subsequently reissued as No. 13,878 here in suit. Of course, the time which elapsed between the grant of Podlesak's patent of **March 4, 1913**, and the filing of Kane's divisional application on January 14, 1915, was only **twenty-two months and ten days.**

The decision of the Court of Appeals, insofar as it relates to the "two year rule" could be disregarded by your Honors as being based upon an obviously false premise (*i. e.*, that Kane filed his divisional application two years after the issuance of Podlesak's patent No. 1,055,076) were it not for the fact that Kane's invention was in *public use* during the pendency of his original application and two years before the filing of his divisional application. The merit of the invention and the public demand for it made this necessary.

If the Court of Appeals is right as to the legal proposition that a patent granted on a divisional application is invalidated by a patent (illustrating the same invention) issued during the pendency of the original application but two years before the filing of the divisional application, then a question immediately arises as to whether or not the Kane patent is invalid because the Webster Company was supplying the public demand for Kane's invention during the pendency of Kane's original application but two years before his divisional application was filed.

Section 4886 of the Revised Statutes, the basis of our patent system, recognizes three *bars* to the grant of a patent. If an invention is *patented*, or *described in any printed publication*, or in *public use in this country* more than two years before *application* for a patent thereon, no valid patent can be granted. If there is any justification for the proposition that a divisional application rests solely on its own bottom, insofar as one of the

recognized statutory bars is concerned, it seems clear that it stands in like relation to the others.

If the decision of the Court of Appeals herein is not corrected, it will stand as a precedent for the new and starting proposition that a divisional application does not benefit by the filing date of the original application from which it is carved. The administration of our patent laws will necessarily undergo a revolutionary change and thousands of valuable patents, many of which have been adjudicated and found valid, will have the stamp of invalidity placed upon them.

Already has one United States Court regarded the Court of Appeals decision herein as a precedent for the revolutionary proposition just mentioned. Judge Cooper, of the United States District Court for the Northern District of New York, has declared the Supreme Court decision in *Chapman* v. *Wintroath*, as interpreted by the Seventh Circuit Court of Appeals in the instant case, to be authority for the proposition that the two year limitations (statutory bars) recognized by R. S. 4886 apply "to a divisional, as well as an original application." Judge Cooper's opinion* is as yet unpublished, but appears in full at page 50 of the addendum to this brief.

As before indicated, the Court of Appeals professes to find in the Supreme Court case of *Chapman* v. *Wintroath* authority for holding claims 7 and 8 of the Kane patent void for reasons aside and apart from any "two year rule." The Court of Appeals said:

> "But we are not required to rest our decision solely upon the two year period fixed by the statute.

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* We have just learned that Judge Cooper has been reversed by the Second Circuit Court of Appeals in an opinion reproduced on page 52 of the Addendum hereto.

Laches may arise and become an effective bar to relief under a variety of circumstances. Laches is based upon delay and delay is a relative term.

"In the last paragraph of the opinion in *Chapman* v. *Wintroath* we find the court referring to laches other than that defined and fixed by the statute *by calling attention to the absence of any evidence in the case under consideration that would warrant any such finding.* . . .

"Turning to the facts in the present case and for the moment ignoring any two-year rule, we find Kane's position in support of claims 7 and 8 untenable." (Italics ours.)

It appears at once that the Court of Appeals took a mere *dictum* from the language of Mr. Justice Clarke and, construing this *dictum*, regarded it as authority for holding Kane's patent void regardless of any "two year rule."

The Court of Appeals in considering the incident that claims 7 and 8 were not formulated and presented in Kane's application until shortly before it issued, apparently overlooked the fact that Kane at all times during the pendency of his original and divisional applications was fighting for claims wherewith adequately to protect his invention.

The Court of Appeals then, apparently for good measure, proceeded to criticise Kane (*a*) because at the time he filed his original application he did not fully realize that *invention* had been exercised in the production of the structure eventually described in claims 7 and 8; (*b*) for becoming involved in interference with Milton and Podlesak, and (*c*) for cancelling certain claims (the counts of the Kane-Podlesak interference) which the Court of Appeals for the District of Columbia had held were too narrow in scope to be readable upon Kane's structure.

These criticisms, even if justified, as we say they are

not, are nothing more than *criticisms*. Neither individually nor collectively are they grounds for destroying claims 7 and 8.

For the Court of Appeals to criticise Kane for failing fully to appreciate the *inventive merit* of the important part of his structure when he filed his original application, is really ludicrous in view of the history of this litigation. The Court of Appeals, in its first opinion, failed to recognize *inventive merit* in the structure of claims 7 and 8, even after its intrinsic merit and commercial success had been demonstrated. Kane has been criticised because his foresight in 1910 was not better than the hindsight of the Court of Appeals *in 1921*. Unrecognized by the Court of Appeals are the many authoritative decisions* to the effect that the failure of an inventor fully to appreciate the merit or the uses of his invention is no basis for destroying his patent when the latter illustrates and adequately claims his invention.

In criticising Kane for becoming involved in interferences with Milton and Podlesak, the Court of Appeals overlooks the fact that such proceedings are mandatory under the provisions of Section 4904 of the Revised Statutes. Milton's claims unquestionably described Kane's structure, and both Kane and the Patent Office Examiner believed that Podlesak's claims did likewise. Under such circumstances, it was necessary that Kane go into the interferences with Milton and Podlesak. If he had not done so, the Patent Office would not have allowed Kane a claim broad enough to protect *his invention* against unauthorized use in the forms illustrated by Milton and Podlesak.

In cancelling the counts of the Kane-Podlesak inter-

* See Grant Tire case, 220 U. S. 428.

ference from his application, Kane pursued the only course which was open to him. The court of last resort in the chain of Patent Office appeals had held that Podlesak's claims were too narrow to be made by Kane. This point having been definitely settled, Kane was then free to claim his invention as broadly as the prior art would warrant. Until the Court of Appeals for the District of Columbia held that no interference in fact existed between Kane and Podlesak, it was not possible for Kane, under the Patent Office rules, to secure a claim dominating the Podlesak structure, notwithstanding the undeniable fact that Podlesak was a mere improver upon Kane.

Stripped of its superfluities, that part of the decision of the Court of Appeals which purports to treat of the subject of "laches" is nothing more than an affirmative answer to the first question presented by the application for certiorari herein, which is:

> "When a patent covering a novel invention of merit is issued in full compliance with the statutes, may it be held invalid for either of the following reasons:
>
> "(*a*) Because the patentee's invention was put in public use *during the pendency of his application*, but two years before he formulated an allowable claim properly defining his actual invention.
>
> "(*b*) Because the invention was disclosed, but *not claimed*, in patents *issued during the pendency* of his application, but two years before he formulated an allowable claim to his invention."

The difficulty with this part of the decision of the Court of Appeals is that it fails to recognize the fundamental proposition, so well set forth by the Supreme Court in *U. S.* v. *American Bell Telephone Company*, 167 U. S. 224, that the conduct of an applicant in the Patent Office is of no avail against the validity of his patent when issued, if he has complied with the requirements

of the statutes pertaining to the filing and prosecution of patent applications.

The conduct in the Patent Office of the patentee whose patent was involved in *U. S.* v. *American Bell Telephone Company*, was truly reprehensible, and contrary to the public good, but when the Supreme Court found that he had complied with the statutory requirements pertaining to the filing and prosecution of patent applications, his patent was held valid, even when *directly* attacked by the sovereign power which granted it. Kane's history in the Patent Office was in some respects unfortunate and long drawn out, but we submit that the records of his application show nothing but continuous and persistent effort to secure a patent covering that which he regarded as justly his. If Berliner's reprehensible conduct in the Patent Office (in the case of *U. S.* v. *American Bell Telephone Company*) could not be invoked to destroy his patent, even when it was attacked in a direct action brought by the Government of the United States for that purpose, *a fortiori*, the Splitdorf Company cannot, in a *collateral* attack on Kane's patent, rely upon delays in the Patent Office which were unavoidable or which might be attributed to the exercise of poor judgment on the part of Kane or the Patent Office Examiners.

The Court of Appeals has failed to point out how, in any respect, Kane failed to comply with the statutes pertaining to the filing and prosecution of patent applications. Failing so to do, its decision finding claims 7 and 8 of the Kane patent to be void, because of delay in their formulation and presentment to the Commissioner of Patents, must be regarded as erroneous.

The Pertinent Statutes.

The monopoly of a United States patent is created by statutes and can be destroyed only upon statutory grounds. No United States patent has ever been held *invalid* for any reason not recognized by the statutes creating it. The novel defenses urged against the Kane patent are clearly of no avail unless they find recognition in the statutes under and by virtue of which the patent was granted.

The pertinent sections of the statutes are as follows:

A. *As to the two-year period.*

> "Sec. 4886. Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his *application*, and not in public use or on sale in this country for more than two years prior to his *application*, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor."

Since the leading Supreme Court cases which relate to divisional patent applications, were rendered under earlier statutes, it is desirable to have in mind the provisions for the two-year period in the earlier statutes so that the applicability of the earlier decisions may be apparent.

The sections of the Patent Act of 1836, corresponding to present R. S., Sec. 4886, quoted above, provided in Section 6 that a patent might be granted to

> "any person or persons, having discovered or invented any new and useful art, machine, manufac-

> ture or composition of matter or any new and useful improvement on any art, machine, manufacture or composition of matter, not known or used by others before his or their discovery or invention thereof, and not *at the time of his application for a patent* in public use or on sale, with his consent or allowance, as the inventor or discoverer";

and further provided in Section 7 that a patent shall be granted if it does not appear that the invention

> "had been invented or discovered by any other person in this country prior to the alleged invention or discovery thereof by the applicant, or that *it had been patented or described in any printed publication in this or any foreign country or had been in public use or on sale with the applicant's consent or allowance prior to the application.*"

Section 7 of the Act of 1839 modified this by providing that—

> "No patent shall be held to be invalid by reason of such purchase, sale or use prior to the application for a patent as aforesaid, except on proof of abandonment of such invention to the public, *or that such purchase, sale or prior use has been for more than two years prior to such application for a patent.*"

The quoted provisions of the Acts of 1836 and 1839 were subsequently combined in Section 24 of the Patent Act of 1870, the public use or sale that would constitute a statutory bar being further limited to one occurring "in this country." Section 24 of the Act of 1870 is identical with present Section 4886 R. S., except that it does not include the two-year prior patenting or publication provisions corresponding to the two-year prior use provisions. These were inserted by the Act of March 3, 1897. Until the Act of 1897, prior patenting or publication was not a bar to a patent unless it occurred prior to the invention. *But ever since the Act of 1839, two-years public use or sale in this country prior to the filing*

of the application has been a bar to a patent. The Act of 1897 merely put the two defenses on the same footing. Therefore Supreme Court decisions rendered prior to 1897 and subsequent to 1839 with regard to two-year prior public use or sale have not been affected by statutory amendments, but to the contrary are applicable now to two years prior patenting or publication, which by the Act of 1897 was put on the same footing as public use or sale had been since 1839.

Section 4887, R. S., adds nothing to Section 4886 quoted above, so far as the provisions as to public use and sale, publication and prior patenting are concerned. The pertinent part of Section 4887 reads as follows:

> "Sec. 4887 . . . But no patent shall be granted on an *application* for patent for an invention or discovery or a design which had been patented or described in a printed publication in this or any foreign country more than two years before the date of the *actual filing of the application* in this country, or which had been in public use or on sale in this country for more than two years prior to such filing."

B. *As to renewed applications including so-called divisional applications.*

> "Sec. 4903. Whenever, on examination, any claim for a patent is rejected, the Commissioner shall notify the applicant thereof, giving him briefly the reasons for such rejection, together with such information and references as may be useful in judging of the propriety of *renewing* his application or of altering his specification; and if, after receiving such notice, the applicant persists in his claim for a patent, with or without altering his specifications, the Commissioner shall order a re-examination of the case."

In order that the pertinency of the early decisions relating to renewed (including divisional) applications

may be understood, it is desirable to have in mind the history of present Section 4903. Section 4903 was embodied in Section 42 of the Patent Act of 1870, and has been unchanged since that date. Prior thereto, Section 7 of the Patent Act of 1836, which contained substantially the same provisions, was effective.

Section 7 of the Act of 1836 provided:

> "But whenever, on such examination, it shall appear to the Commissioner that the applicant was not the original and first inventor or discoverer thereof, or that any part of that which is claimed as new had before been invented or discovered, or patented or described in any printed publication in this or any foreign country as aforesaid, or that the description is defective and insufficient, he shall notify the applicant thereof, giving him briefly, such information and references as may be useful in judging of the *propriety of renewing* his application or of altering his specification, to embrace only that part of the invention or discovery which is new. In every such case, if the applicant shall elect to withdraw his application, relinquishing his claim to the model, he shall be entitled to receive back twenty dollars, part of the duty required by this Act, on filing a notice in writing of such election in the Patent Office. . . . But if the applicant shall persist in his claims for a patent, with or without any alteration in his specifications, he shall be required to make oath or affirmation anew in manner aforesaid."

It is under these provisions for *renewed* applications that divisional or continuing applications always have been regarded as a part of the original application. Applications renewed under present Section 4903 R. S., (and formerly under Section 7 of the Act of 1836) have always been called "continuing" or "divisional" applications to distinguish them from applications renewed after forfeiture for failure to pay the final fee pursuant to R. S., Section 4897 (page 45, *infra*). The latter, with which we are not here concerned, are generally referred to as "renewed" applications.

There are not, and never have been, any special statutory provisions for *divisional applications* as distinguished from *other renewed applications.* But the Commissioner of Patents exercising the authority granted to him by Section 483 of the Revised Statutes "to establish regulations not inconsistent with law for the conduct of proceedings in the Patent Office" has adopted the following rule with reference to the division of patent applications:

> "If several inventions, claimed in a single application, be of such nature that a single patent may not be issued to cover them, the inventor will be required to limit the description, drawing and claim of the pending application to whichever invention he may elect. The other inventions may be made the subjects of separate applications, which must conform to the rules applicable to original applications. If the independence of the inventions be clear, such limitations will be made before any action upon the merits; otherwise it may be made at any time before final action thereon, in the discretion of the examiner. A requirement of division, will not be repeated without the written approval of a law examiner. After a final requirement of division the applicant may elect to prosecute one group of claims, retaining the remaining claims in the case with the privilege of appealing from the requirement of division after final action by the examiner on the group of claims prosecuted." (Rule 42.)

C. *As to pleading the two-year period as a defense.*

> "Sec. 4920. In any action for infringement the defendant may plead the general issue, and, having given notice in writing to the plaintiff or his attorney thirty days before, may prove on trial any one or more of the following special matters:
>
> . . . . . .
>
> "Third. That it has been patented or described in some printed publication prior to his supposed invention or discovery thereof, or more than two

years prior to his application for a patent therefor; or

. . . . . .

"Fifth. That it had been in public use or on sale in this country for more than two years before his application for a patent, or had been abandoned to the public.

"And in notices as to proof of previous invention, knowledge or use of the thing patented, the defendant shall state the names of the patentees and the dates of the patents, and when granted, and the names and residences of the persons alleged to have invented or to have had prior knowledge of the thing patented, and where and by whom it had been used; and if any one or more of the special matters alleged shall be found for the defendant, judgment shall be rendered for him with costs. And the like defenses may be pleaded in any suit in equity for relief against an alleged infringement; and proofs of the same may be given upon like notice in the answer of the defendant, and with the like effect.

The history of the "two-year" provision in Section 4920 has paralleled precisely that of the two-year provision in Section 4886 above discussed (see Sec. 15, Act of 1836; Sec. 7, Act of 1839; Sec. 61 of the Act of 1870; Sec. 2 of the Act of Mar. 3, 1897)."

D. *As to the declaration of interferences.*

"Sec. 4904. Whenever an application is made for a patent which, *in the opinion of the Commissioner*, would interfere with any pending application, or with any unexpired patent, he *shall* give notice thereof to the applicants, or applicant and patentee, as the case may be, and *shall* direct the primary examiner to proceed to determine the question of priority of invention. And the Commissioner may issue a patent to the party who is adjudged the prior inventor, unless the adverse party appeals from the decision of the primary examiner, or of the board of examiners-in-chief, as the case may be, within such time, not less than twenty days, as the Commissioner shall prescribe."

E. *As to the prosecution of patent applications.*

"Sec. 4894. All applications for patents shall be completed and prepared for examination within one year after the filing of the application, and in default thereof, or upon failure of the applicant to prosecute the same within one year after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable."

F. *As to applications renewed after forfeiture.*

"Sec. 4897. Any person who has an interest in an invention or discovery, whether as inventor, discoverer, or assignee, for which a patent was ordered to issue upon the payment of the final fee, but who fails to make payment thereof within six months from the time at which it was passed and allowed, and notice thereof was sent to the applicant or his agent, shall have a right to make an application for a patent for such invention or discovery the same as in the case of an original application. But such second application must be made within two years after the allowance of the original application. But no person shall be held responsible in damages for the manufacture or use of any article or thing for which a patent was ordered to issue under such *renewed* application prior to the issue of the patent. And upon the hearing of *renewed* applications preferred under this section, abandonment shall be considered as a question of fact."

G. *As to the jurisdiction of the Court of Appeals for the District of Columbia in interference cases.*

Act of Feb. 9, 1893, ch. 74; 27 Stat. L., 434.

"Sec. 9. That the determination of appeals from the decision of the Commissioner of Patents, now vested in the general term of the Supreme Court of the District of Columbia, in pursuance of the pro-

visions of Section seven hundred and eighty of the Revised Statutes of the United States, relating to the District of Columbia, shall hereafter be, and the same is hereby, vested in the Court of Appeals created by this act; and in addition any party aggrieved by a decision of the Commissioner of Patents in any interference case may appeal therefrom to said Court of Appeals."

ARGUMENT.

The Novel Technical Defenses to the Kane Patent Which Are Said to Have Been Recognized By the Supreme Court In Chapman v. Wintroath.

These defenses, as we understand them, are as follows:

1. That the bars to the grant of a patent which are recognized by Section 4886 R. S. apply to a *divisional* as well as an *original* application; that Kane's patent is invalid because he permitted his invention to go into public use two years before the filing of his *divisional* application *but not two years before* the filing of his *original* application.

2.* That Kane's claims 7 and 8 are void because not presented in his regularly pending divisional application within two years after the occurrence of either or both of the following:

A. Public use and sale by Kane and his assignee occurring for the first time less than one year prior to the filing of the original application on February 2, 1910.

B. The issuance, during the pendency of the original application, of the patents to Milton and Podlesak who did not invent and did not claim the invention in question.

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* See foot note page 47.

3.* That Kane was allowed claims 7 and 8 in violation or disregard of the "two year rule" pertaining to Patent Office interference practice, which was criticised and corrected by the Supreme Court in *Chapman* v. *Wintroath*.

Kane's Patent Granted On a Divisional Application Is Entitled to All of the Benefit of the Filing Date of the Original Application Filed February 2, 1910.

(Answer to the First of the Novel Technical Defenses.)

The Kane patent in suit was granted on an application filed January 14, 1915, as a division of a *then pending* original application filed well within two years after the occurrence of any statutory bar. Respondent's contention that Kane's patent is invalid by statutory bars not applicable to the original application is clearly based upon a misunderstanding of the Supreme Court decision in *Chapman* v. *Wintroath*.

In the Court of Appeals, counsel for the respondent in referring to the Supreme Court decision in *Chapman* v. *Wintroath* said:

> "It would seem inevitable, from the reasoning of its opinion, that it [Supreme Court] will hold, when the question comes squarely before it for decision, that a divisional application, like an original application, must stand on its own bottom and be judged by its own date with respect to the statutory defenses applicable to the date of filing an application. . . ."

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* The sufficiency of the second and third of the technical defenses stated above was directly challenged by the petition for certiorari herein. We understand that counsel for the Splitdorf Company, encouraged by Judge Cooper's revolutionary decision (addendum page 50) are intending to urge the first of the above defenses in this court. Judge Cooper has recently been reversed (addendum page 52). As a consideration of the second and third of said defenses will be simplified when the first defense has been demonstrated to be without merit, we shall consider the said defenses in the order above stated.

This is a startling argument in view of the decisions which, from the very inception of our patent system, uniformly have held that a divisional application must be judged as if filed on the date of the filing of the original application of which it is a division.

The leading Supreme Court case on this subject is *Godfrey* v. *Eames* (1863), 1 Wall., 317, 324. In holding that the patentee was entitled to the date of his original application for the purpose of overcoming two years' public use prior to the filing of a renewed (divisional) application, the Supreme Court said:

> "In this case the patentee filed his application in the Patent Office on the 31st of January, 1855, and from that time it was constantly before the office, until the patent was issued on the 2nd of March, 1858, except that on the 24th day of April, 1857, it was withdrawn and refiled on the same day with an amended specification. It was admitted and proved 'that the patentee, in the summer and fall of 1854, and since, publicly manufactured and sold boot-trees containing his alleged invention.' The sales and use as thus shown were less than two years before the first application was filed and hence, according to the letter of the act of 1839* cannot affect the validity of the patent.
>
> "In answer to this, two propositions are relied upon by the plaintiff in error:
>
> "1. It is said the original and the renewed application are for patents for different things.
>
> "Both specifications are before us, and it is our duty to construe them.
>
> "The act of 1836† gives the applicant a right to change his specification after receiving the suggestions of the Commissioner. Doubtless, this right exists and may be exercised independently of such suggestions, at any time before the Commissioner has given his formal judgment upon the application; and the inventor may 'persist in his application for

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* See quotation from Act of 1839, *supra*, page 40.

† See quotation from Act of 1836, *supra*, page 39.

a patent, with or without any alteration of his specification.' A change in the specification as filed in the first instance, or the **subsequent filing of a new one whereby a patent is still sought for the substance of the invention as originally claimed, or a part of it, cannot in any wise affect the sufficiency of the original application or the legal consequences flowing from it.** To produce that result the new or amended specification must be intended to serve as the basis of a patent for a distinct and different invention, and one not contemplated by the specification, as submitted at the outset.

"We are satisfied that there was here such substantial identity in the two specifications as brings the case within the rule thus laid down. This objection cannot be sustained.

"2. It is said that the withdrawal of the first application broke the continuity of the claim, and that the case stands as if the only application were the one of the 24th of April, 1857.

"This question could not have arisen upon the same state of facts, under the act of 1836. According to that act, and the prior legislation of Congress, the public use or sale by the inventor of the thing invented, at any time before the application, was fatal to his claim for a patent. The act of 1839 relieved him from this consequence and introduced a new and more liberal policy. It gave him the right to apply for a patent at any time within two years after the use and sale of his invention, 'except on proof of the abandonment of such invention to the public.' The provision in the act of 1836,* allowing the withdrawal of the application, was intended only to provide for the disposition in such cases of the duty which had been deposited, and to enable the applicant to resume a part of it upon the condition prescribed; it is silent as to everything beyond this, and we do not feel authorized to interpolate into the statute so important a qualification. The new provision in the act of 1839, is wholly independent of the act of 1836; by necessary implication it repeals the conflicting provision upon the same subject in

*See quotation from Act of 1836, *supra*, page 39.

the earlier act. It must be examined by its own light, and so construed as to give the fullest effect to the beneficent purpose of the legislature.

"In our judgment, if a party choose to withdraw his application for a patent, and pay the forfeit intending at the time of such withdrawal to file a new petition, and he accordingly does so, the two petitions **are to be considered as parts of the same transaction, and both as constituting one continuous application, within the meaning of the law.**"

The rule established in the foregoing case has uniformly been followed.

In *Smith* v. *Goodyear Dental Vulcanite Co.* (1876), 93 U. S., 486, 500, the Supreme Court said:

"The remaining defenses to the bill rest mainly on the assumption that the new petition presented to the Patent Office in 1864 cannot be regarded as a continuation of the application made for a patent on the 12th of April, 1855. But this cannot be conceded. The history of the application, as we have given it, forbids such an assumption. No act of Cummings amounted to a withdrawal of his first petition, or to an acquiescence in its rejection. It is true, he filed a second petition in 1864; but he accompanied it with substantially the specification that remained in the office, and with the same drawings. It was a mode of procuring another consideration of his rejected claim; and the Commissioner regarded it as such. The act of March 2, 1861, gave him authority thus to regard it. He replied to the application, that his claim was embraced in an application filed by him in 1855, and rejected for want of novelty, admitted that it had been improperly rejected, and suggested an amendment to make it correspond with his former amended claim. It is impossible, in view of these facts, to regard the effort to obtain a new patent in 1864 as a new and independent application, disconnected from the application made in 1855. **It was but one stage in a continuous effort.** In *Godfrey* v. *Eames*, 1 Wall. 317, the first application was actually withdrawn, and a new petition was presented at the time of the with-

drawal, with a different description of the invention; but as the thing patented under the second might have been engrafted as an amendment of the first, it was ruled that all the proceedings constituted one application. This court said, 'If a party choose to withdraw his application for a patent, and pay the forfeit, intending at the time of such withdrawal to file a new petition, and he accordingly does so, the two petitions are to be considered parts of the same transaction, and both as constituting one continuous application.' **We are not aware that filing a second petition for a patent, after the first has been rejected, has ever been regarded as severing the second application from the first and depriving the applicant of any advantage he would have enjoyed had the patent been granted without a renewal of the application.** The contrary was decided by the Circuit Court for the Southern District of Ohio, in *Bell* v. *Daniels*, 1 Fish. 372, and in *Blandy* v. *Griffith et al.*, 3 *id.* 609; and these decisions are founded in justice and sound reason.

"If, then, as we think it must be held, the proceeding to obtain the patent was a continuous one from 1855 until it was granted; if the application of 1855 is not severable from the proceedings of 1864,—there is no foundation whatever for the allegation that the invention was abandoned to the public, and that it was in public use or on sale for more than two years before the inventor's application. The first use of it proved, by any other than Dr. Cummings, was in 1859; and there is no evidence that this was with his consent. And the proof respecting his health and pecuniary condition, together with his constant efforts to obtain the necessary means to prosecute his rights, rebuts all presumption that he ever abandoned, actually or constructively, either his invention or his application for a patent. That he never intended an abandonment of his invention is perfectly clear; and it was not his fault that granting the patent was so long delayed."

In *Smith Co.* v. *Sprague* (1887), 123 U. S. 249, 250, the Supreme Court said:

"The defenses relied on are, 1st, a denial of the

> infringement alleged in respect to the fifth claim of patent No. 228,136 and the first and fourth claims of patent No. 231,199; and, as to all the other claims of both, that a machine embodying them **was in public use for more than two years prior to the application for patents.** The application for patent No. 228,136 was filed on November 11, 1879, while that for patent No. 231,199 was filed December 2, 1878, the two being **divisions** of an application based on the same model. The machines described in the two patents, it is admitted, are substantially the same in construction and operation, both patents being for different parts and combinations of a single machine. For the purposes of this case, therefore, the date of the application is to be taken as of December 2, 1878, being the earlier of the two."*

And in the recent case of *Chapman* v. *Wintroath* (March, 1920), 252 U. S. 126, 137, the case on which our adversaries rely, the Supreme Court carefully reaffirmed this doctrine, saying:

> "To this we must add that not only have later or **divisional** applications not been dealt with in a hostile spirit by the courts, but, on the contrary, designed as they are to secure the patent to the first discoverer, they have been favored to the extent that where an invention clearly disclosed in an application, as in this case, is not claimed therein but is subsequently claimed in another application, the original will be deemed a constructive reduction of the invention to practice and **the later one will be given the filing date of the earlier, with all of its priority of right.** *Smith & Griggs Manufacturing Co.* v. *Sprague*, 123 U. S. 249, 250; *Von Recklinghausen* v. *Dempster*, 34 App. D. C. 474, 476, 477; 154 O. G. 252."

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* This was the original application. The court referred to both applications as "divisions," and properly so, because that which remains in an original application after division is made is just as truly a "division" of the divided transaction as is the later filed or recalled "divisional" application.

The inferior court cases are numerous and all to the same effect as to the Supreme Court cases.

Victor v. *American,* 145 Fed. 350 (2nd C. C. A.).

General v. *Continental,* 256 Fed. 660 (2nd C. C. A.).

Corrington v. *Westinghouse,* 173 Fed. 69 (Dist. Ct., N. D of N. Y.).

Heinz v. *Cohn,* 207 Fed. 547 (9th C. C. A.).

In *Rosenwasser* v. *B. E. Mfg. Co.,* 264 Fed. 114, the Second Circuit Court of Appeals quoted the following paragraph from Walker's authoritative text book on patents, as accurately expressing the law:

> "Sec. 145. . . . Where an application covers two inventions, one of which is withdrawn therefrom by division, and made the subject of a divisional application, that new application relates back to the original application from which it was carved, and is not chargeable with any diminution of significance on account of the transaction."

The established practice of the Patent Office is set forth in a recent Commissioner's decision (January 6, 1922) in the case of *Lee et al.* v. *Vreeland,* 317 O. G. 234, in which appears:

> "Under the settled practice of this office, **a divisional application takes its effective date from the date of the filing of the parent case,** and any publication subsequent thereto is not a bar to any claims in the divisional case which are supported by the disclosure of the earlier case, whether such matter was or was not claimed in such earlier application."

Counsel for the Webster Company respectfully submit that the patent statutes and all of the Supreme Court decisions relating to divisional patent applications, including the decision in *Chapman* v. *Wintroath,* repudiate respondent's assertion that the patent in suit

granted on Kane's regularly filed divisional application is invalidated by statutory bars not applicable to the original application from which the divisional application was carved.

Respondent's Contention That a Divisional Patent Application "Stands On Its Own Bottom" In Its Relation to the Statutory Bars Is Revolutionary, and If Approved Would Invalidate a Large Proportion of All Existing Patents and Delay the Future Development of New Inventions.

As we previously have pointed out, the decisions of the courts from early times uniformly have held that the *application* for a patent referred to in the statutes is the *original application*, and that a divisional application is to be construed as being a part of the original application insofar as the so-called statutory bars are concerned.

Under the authority of these decisions innumerable patents have been applied for, issued and sustained—patents which will become invalid if your Honors approve respondent's contention that a divisional application stands on its own bottom, deriving no benefit from its original application insofar as the statutory bars are concerned.

It has always been the policy of our patent law to encourage inventors to develop their inventions and make them available to the public as quickly as possible. Thus, the statutes provide that an inventor may file his application for patent any time within two years after his invention has been publicly used or been published in any way. American inventors, as a general rule, have not hesitated to develop their inventions and make them available to the public even in advance of

filing their patent applications—relying upon the recognized right of the original inventor to secure a valid patent on an application filed within two years after the first occurrence of any one of the so-called statutory bars.

If respondent's contention that a divisional application "stands on its own bottom" in relation to the statutory bars were to be adopted as the law, no reasonably careful inventor would permit a meritorious and patentable improvement to go into public use or become known in any way until after his patent or patents had actually issued. For, at any time during the pendency of his application, it might be necessary, or be considered by the Patent Office to be necessary, to divide it or file a renewed application, and in such event his disclosure and development work two years prior to such division or renewal would destroy his right to obtain protection. This is precisely the situation in which Kane will find himself in this case if respondent's contention is approved by this court. The inevitable effect of such a reversal of the established law as to the continuity of original and divisional or renewed continuing applications for the purpose of fixing the date of the two year statutory bars, would be to postpone the development of new inventions until patents for them actually issued. This would defeat the very purpose of Congress in adopting the two year provision, which, as the Supreme Court pointed out in *Godfrey* v. *Eames, supra,* was to enable the inventor safely to put his invention into use prior to filing his application.

The Validity of Kane's Claims 7 and 8 Is Not Affected by Any Public Use or Publication Occurring Subsequent to His Invention and Less Than Two Years Before the Filing of His Original Application on February 2, 1910.

(Answer to the Second of the Novel Technical Defenses.)

In their brief in the Court of Appeals, counsel for the Splitdorf Company made the following statements:

> "Claims 7 and 8 of the Kane patent were introduced by an amendment filed June 17, 1918. These claims were directed to the same subject matter that was *disclosed* in the Podlesak patent of March 4, 1913, and they were based upon the identical construction which had been in public use and on sale in this country since the middle of the year 1909, and which was *disclosed in and covered* by Milton's British patent of that year. Their subject matter had, therefore, been patented and described in a printed publication more than eight years earlier, in the Milton British patent and more than five years earlier in the Podlesak patent, and had been in public use and on sale by plaintiff itself for practically nine years.
>
> "It would seem clear, therefore, that under the reasoning and conclusions of the Supreme Court in *Chapman* v. *Wintroath* these claims cannot possibly be sustained in the Kane patent, even if their subject matter were otherwise patentable." (Italics ours).

We are unable to understand how counsel for the Splitdorf Company contrive to find, in *Chapman* v. *Wintroath*, any basis for the startling conclusion that a patent for a meritorious invention can be invalidated by any public use or publication (in a patent or otherwise) occurring subsequent to the patentees invention and less than two years before his application for patent.

Milton's British patent was applied for less than four months before the filing of Kane's original application

on February 2, 1910. The United States patents to Milton and Podlesak were applied for and issued during the *pendency* of Kane's original application. No one of these patents claim* the Unitary Magneto Ignition Equipment of Kane's claims 7 and 8. Neither Milton nor Podlesak was the inventor† of the subject-matter of these claims.

If the Milton and Podlesak patents have any standing in this case, it is merely as *publications* occurring during the *pendency* of Mr. Kane's patent applications. Public use of Kane's invention *less than two years* before his application was filed on February 2, 1910 is admitted.

Prior public use and prior publication of a patented invention are, and always have been considered, statutory defenses. They are two of the defenses recognized by Section 4920 of the Revised Statutes (page 43, *ante*). Hence, we must look to the patent statutes to determine when a public use or publication of an invention will invalidate a patent covering such invention.

In referring to Section 4886 of the statutes (page 39, *ante*) to determine the kinds of public use and publication which will bar an inventor's right to a patent, we find that the public use to be effective as a bar must occur "*more than two years prior to his application,*" and that publication to be effective as a bar must also occur "*more than two years prior to his application.*" So far as this section of the statutes is concerned, neither a public use nor publication constitutes a bar to a patent if it does

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*We have heretofore explained that Milton's United States patent 1,096,048 and Podlesak's patent 1,055,076 did not claim the invention of Kane's claims 7 and 8. Milton's British claims are narrower than his United States claims. We do not believe that the validity of claims 7 and 8 would be affected even if Milton and Podlesak had claimed it. But we resent any attempt to confuse the issue by assertions that they did claim it.

†Judge Sanborn held, and the evidence herein establishes beyond doubt, that Kane and not Milton was the real inventor. Kane's originality as against Podlesak has never been questioned.

not occur more than *two years prior* to the *application* for the patent. There is nothing in this section of the statutes which affords the slightest basis for the proposition that a public use or publication occurring during the *pendency* of a patent application can invalidate a patent granted on such application.

Referring to Section 4887 of the statute (page 41, *ante*) which is specifically concerned with the effect of public use and publication, we find that no patent shall be granted for an invention if it has been "described in a printed publication in this or any foreign country more than two years *before* the date of the *actual filing* of the *application.*" This section also provides that no patent shall be granted if the invention has been "in public use or on sale in this country for more than two years *prior to such filing.*" There is nothing in this section of the statutes which in the slightest degree supports the contention that public use or publication of a patentee's invention, which occurred less than two years before his application for patent, can invalidate his patent. But to contend that publication or public use occurring during the *pendency* of the *application* invalidates the patent is obviously fallacious and is repudiated by this section of the statute.

Referring now to Section 4920 of the statutes (page 43, *ante*) which enumerates the special defenses which may be presented by a defendant who challenges the validity of a patent, we find that the defendant may contend with respect to the patentee's invention—

> "That it had been patented or described in some printed publiction prior to his supposed invention, or discovery thereof, or more than two years *prior* to his *application* for a patent therefor;"

or

> "That it had been in public use or on sale in this country for more than two years *before* his *applica-*

tion for a patent, or had been abandoned to the public."

The above are the third and fifth defenses enumerated in Section 4920 of the statutes. They are the only ones of these defenses which are concerned with public use or publication. There is nothing in this section of the statutes which is, in any way, compatible with the proposition that public use or publication occurring *less* than two years prior to a patent *application* or during the *pendency* of the application, is a bar to the grant of a patent on such application.

The meaning of the herein discussed sections of the patent statutes is unmistakable. They have stood the test of the years, and constitute the bulwark of our patent system. Never has any court found in these statutes a basis for the proposition that a public use or publication of a patented invention, which occurs during the *pendency* of the application or *less* than two years prior to its filing, can constitute a bar to the patent granted thereon.

If the fact that Kane's claims 7 and 8 were not formulated and submitted to the Patent Office until more than two years after the public use of his invention, or its appearance in the Milton and Podlesak patents, then it must be held invalid upon the theory that the word "application" as it appears in Section 4886 R. S. (page 39, *ante*) *means submission of claiming clauses finally agreed upon between the applicant and the Patent Office;* and that the words "actual filing of the application" as used in Section 4887 R. S., means *actual submission of claiming clauses finally agreed upon between the applicant and the Patent Office.* These statutes state the only bars to the validity of a patent which are recognized by the statutes. If interpreted as respondent seeks to have them interpreted, they will be given a meaning heretofore unsuspected and one, we respectfully submit, which was

not intended by Congress when these statutes were enacted as the foundation of our patent system.

Congress in creating a patent system which provides for rigid examination of the claiming clauses of patent applications realized that in many cases much time would be consumed before claims could be formulated to determine the metes and bounds of a patent monopoly to the satisfaction of both the applicant and the Patent Office. Therefore, Congress wisely and justly stipulated that a patent should be judged, in its relation to the statutory bars, by the date of the *application* therefor and not by the date of submission of the particular claims appearing in the patent as issued.

Respondent's contention that claims 7 and 8 are invalid merely because not formulated and submitted in final form until June 17, 1918, is untenable because it finds no justification in the patent statutes.

> "These are questions not of natural, but of purely statutory, right. . . . No court can disregard any statutory provisions in respect to these matters on the ground that in its judgment they are unwise or prejudicial to the interest of the public. . . ." (*U. S.*, v. *American Bell Telephone Co., et al.*, 167 U. S., 224.)

Kane's Claims 7 and 8 Were Not Granted in Violation of the Two-Year Rule of Chapman v. Wintroath—Their Validity Would Not Be Impaired Had They Been So Granted.

(Answer to the Third of the Novel Technical Defenses.)

In *Chapman* v. *Wintroath*, the Supreme Court considered and corrected a mere rule or doctrine pertaining *solely* to *applicants* for patents involved in Patent Office interference proceedings instituted under Section 4904, R. S. (page 44, *ante*). The Court of Appeals for the

District of Columbia, in the exercise of its appellate jurisdiction over the Patent Office in interference cases, in order to avoid unnecessary delay in the institution of interferences between *applicants* and patentees, evolved a doctrine or rule to the effect that, under *ordinary circumstances*, an *applicant* who seeks to interfere with an issued patent must copy the claims of the issued patent within *one year* from its date or be regarded as estopped from doing so.

The Supreme Court in *Chapman* v. *Wintroath* found this rule or doctrine repugnant to the statutes but intimated that the rule would be tenable, solely because not repugnant to the statutes, if it gave the applicant *two years* to copy the claims of the issued patent.

That the corrected rule or doctrine may, within reason, be enforced against *applicants* for patents is not doubted, but we respectfully submit that this particular rule, or any other Patent Office rule, is of no consequence when the validity of an *issued* patent is to be determined. An issued patent represents a solemn contract between the United States on the one hand and the patentee on the other. The conditions of that contract are set forth in the statutes, and no administrative rule or doctrine pertaining to proceedings preliminary to the consummation of that contract is of any consequence after the contract has been approved by the Patent Office and consummated by the issuance of the patent.

Kane's claims 7 and 8, even when before the Patent Office, were entirely outside of the rule or doctrine of *Chapman* v. *Wintroath*, because these claims are entirely unlike the claims of any issued patent. Their allowance to Kane did not require the declaration of an interference with any issued patent.

But if, for the sake of argument, it were admitted that

the allowance of claims 7 and 8 involved a waiver of this particular rule or doctrine, we would say that the Commissioner had the right to waive the rule; and that the waiver, or even the oversight of such a rule, is of no consequence when the validity of a patent *granted under the statutes* is concerned.

That the rule or doctrine of *Chapman* v. *Wintroath* is a mere administrative rule which may be waived in the discretion of the Commissioner of Patents is clearly indicated by the very opinion of the Court of Appeals for the District of Columbia in which the rule or doctrine was announced. Thus, in *Wintroath* v. *Chapman*, 47 App. D. C. 428, the Court of Appeals for the District of Columbia said:

> "We, therefore, adhere to the ruling in the Rowntree case, but with this modification, however, the period should be one year unless the applicant *shall satisfy the Commissioner that the delay was unavoidable.* This brings the holding into closer harmony with the statute governing amendments (Revised Stats. Sec. 4894) than is done by the Rowntree case."

The Commissioner of Patents provides and frequently revises a set of "Rules of Practice" to govern routine matters in the Patent Office. In addition, both the Commissioner and the Court of Appeals for the District of Columbia, in the exercise of their quasi judicial and quasi administrative duties in interference cases, announce and enforce practice doctrines in their decisions. This custom is right because the standard "Rules of Practice" are insufficient to meet constantly changing administrative problems. But these rules or doctrines, whichever they may be designated, do not amend the patent statutes and no waiver or even oversight of such a rule or doctrine can invalidate a patent for a meritorious invention granted in full compliance with the patent statutes.

That the validity of a patent is not subject either to direct or collateral attack upon any ground not recognized by the patent statutes was settled by the Supreme Court in the case of *United States* v. *American Bell Telephone Co. et al.*, 167 U. S., 224. In speaking of the statutory right secured to an inventor by his patent grant the court said:

> "The statute has given this right, and no consideration of public benefit can take it from him. His right exists because Congress has declared that it should. . . . A party seeking a right under the patent statutes may avail himself of all their provisions, and the court may not deny him the benefit of a single one. These are questions not of natural, but of purely statutory, right. . . . No court can disregard any statutory provisions in respect to these matters on the ground that in its judgment they are unwise or prejudicial to the interests of the public. . . . As the law making power has prescribed what the public will give, specified the terms and conditions of the purchase, indicated the time and methods of determining the right of compensation, he on his part has an absolute legal right to avail himself of all the provisions thus made. It is not, of course, doubted that the courts in construing the patent, as well as all other statutes, must have regard to the spirit as well as the letter. That simply requires that courts shall ascertain their true meaning, but when that is ascertained the applicant for a patent is entitled to all benefits which those statutes thus construed give."

Congress in creating our patent system realized that, if unrestrained, infringers would devise all sorts of elaborate and far-fetched defenses in their attempts to defeat the purposes of the patent statutes. As a preventive measure, Congress enacted a statute (Section 4920, page 43, *ante*) which enumerates and defines the special defenses which may be pleaded by a defendant who challenges the validity of a patent. Needless to say,

an infraction of a Patent Office rule or doctrine is *not* one of these defenses.

When a patent is issued, it has gone forever beyond the control of the tribunals concerned in the issuance of patents, and no rule or doctrine established by the Patent Office or the Court of Appeals for the District of Columbia, no matter how reasonable, can be invoked to destroy it, since the patent monopoly was created by statute, and can be destroyed solely upon statutory grounds.

If the rule or doctrine of *Chapman* v. *Wintroath* ever applied to Kane's claims 7 and 8, and we submit they were never within that rule or doctrine, the rule was conclusively waived when the Commissioner of Patents, in the exercise of his discretion, decided to issue and did issue Kane's patent.

Kane's Original and Divisional Applications Were Filed, Prosecuted and Issued As Patents in Full Compliance With the Letter and Spirit of the Statutes.

That the unitary magneto ignition equipment which was evolved by Kane in April, 1909, and made available to the public almost immediately thereafter, involved *invention* in its production cannot seriously be denied at this stage of the case. Both of the courts below have held that Kane did make a meritorious invention.

Kane applied for a patent on February 2, 1910 (R. Vol. 2, page 502). This application fully illustrated his invention and complied with the statutory requirements in every respect. The Patent Office Examiner rejected all of his claims on March 26, 1910. Thereafter, the applicant repeatedly submitted claims for the approval of the Patent Office, but up to May 9, 1914 (when all claims were finally rejected), the Examiner persistently refused

to allow a single claim from the many which the applicant had formulated and submitted. The Examiner, furthermore, failed to suggest any claim which the Patent Office would be willing to allow.

On May 12, 1914, the Patent Office inadvertently issued to John L. Milton a patent containing detail claims descriptive of Kane's structure. We say the Milton patent was inadvertently issued because prior to the issuance of Milton's patent, Milton's claims should have been made the subject-matter of an interference between Kane and Milton in conformity with the mandatory requirements of Section 4904 R. S. (page 44, *ante*).

Kane, on October 22, 1914, added the Milton claims to his application and asked for an interference. Following the addition of these claims, the Patent Office, on November 12, 1914 (R. Vol. 2, 551), stated that "if applicant wishes to contest in interference the invention covered by the claims of the patent, he can do so only by filing a divisional application of this case and presenting therein the claims of the patent." The Examiner required division because Kane's claims which had been improperly* finally rejected on May 9, 1914, were directed to the so-called "cut out," a relatively unimportant feature of Kane's device to which he had been driven in his claims because of the negative attitude maintained by the Examiner.

On January 14, 1915, Kane filed the divisional application which the Patent Office had required (R. Vol. 3, 623). In his first action on this divisional application, dated March 24, 1915, the Examiner called Kane's attention to Podlesak patent No. 1,055,076, saying that it "may have

* The rejected claims of the original application were finally allowed, along with two others on appeal to the Commissioner (R. Vol. II, 613). The original application resulted in patent No. 1,204,573 (R. Vol. III, 914).

bearing upon applicant's case." In investigating the Podlesak patent No. 1,055,076 Kane discovered that it had been reissued as No. 13,878 on February 19, 1915, and that the patent as reissued contained claims which appeared to be descriptive of Kane's disclosure.

Kane promptly on April 17, 1915, added the Podlesak claims to his application for the purpose of an interference (R. Vol. 3, 634). The Patent Office for a time took the position that the Podlesak claims were too narrow to read upon Kane's disclosure, but finally declared an interference between Kane and Podlesak on October 20, 1915 (R. Vol. 3, 679). An interference had previously been declared between Kane and Milton on August 17, 1915 (R. Vol. 3, 643).

Kane's divisional application remained in interference and was not subject to amendment until after May 6, 1918, when the Court of Appeals for the District of Columbia finally held that the Podlesak claims could not properly be included in Kane's application (R. Vol. 3, 700). The Court of Appeals based its ruling upon the doctrine of *Rowntree* v. *Sloan* and *Wintroath* v. *Chapman* (which the Supreme Court found repugnant to the statutes in *Chapman* v. *Wintroath*), and upon the *better ground* that Podlesak's claims were too specific, too narrow, to read upon Kane's fundamental invention on which the Podlesak device was admittedly a mere improvement. The interference with Milton had terminated favorably to Kane before the termination of the interference with Podlesak.

As soon as Kane's divisional application was restored to the jurisdiction of the Primary Examiner, following the termination of the interferences, Kane promptly on June 15, 1918, submitted two additional claims (claims 7 and 8 of the patent in suit) which were not characterized by the limitations of the Podlesak claims, but which,

to the contrary, defined Kane's fundamental invention in a more accurate way than it ever had been claimed before. The Patent Office Examiner (as subsequently did both of the courts below in this case) held these claims to be directed to a meritorious invention and indicated their allowability (R. Vol. 3, 694).

Kane thereupon immediately placed his application in condition for allowance by cancelling the claims of the Podlesak interference, which it had been held were not descriptive of his device. The patent issued on September 24, 1918, and suit thereunder was immediately instituted against the present defendant and others.

If your Honors will read the histories of Kane's original and divisional applications, you will see that at all times from the filing of his original application in 1910 to the submission of claims 7 and 8 in 1918, he was engaged in a continuous struggle to secure the patent protection to which he was entitled under the statute. He complied strictly with the provisions of Section 4894 R. S. (page 45, *ante*) pertaining to the prosecution of applications.

It is true that Kane's real invention (described by claims 7 and 8) was a difficult thing to recite in the claiming clauses of a patent specification. It was not until after the invention had been scrutinized, weighed and analyzed by the courts and Patent Office tribunals in several suits and interferences that the *real invention* and the proper language for defining it were determined. Even the distinguished Circuit Court of Appeals admits that in its first opinion it fell into error through its failure to perceive the real invention. Furthermore, Milton, whose patent disclosure is practically identical with that of Kane, *tried* to secure a patent on Kane's invention, but all he got was a detail patent because *he* did not know how to claim the *real invention*. Kane is

to be commended, rather than criticized, because his patent did not issue until his real invention was defined by the claims thereof. Otherwise the object of the patent statutes would have been defeated.

We respectfully submit that the history of Kane's application in the Patent Office is above reproach, and that the patentee cannot lawfully or rightly be penalized because he could not secure the allowance of a satisfactory claim until his patent applications had been pending for nine years. Nine years is not by any means an unusual length of time for an invention to be held up in the Patent Office, particularly when interferences hold up the issuance of the patent.

Railway Company v. Sayles.

In their reply to the petition for certiorari counsel for the respondent endeavored to create the impression that the decision of the Court of Appeals herein was influenced by the opinion by Mr. Justice Bradley in *Railway Company* v. *Sayles*, 97 U. S., 554. The Court of Appeals did not mention *Railway Company* v. *Sayles* in its opinion. Nor do we think the court was influenced thereby because that authority is in no way pertinent to the case at bar.

In *Railway Company* v. *Sayles*, the patentees, Bachelder & Thompson, applied in 1847 for a patent on a most complicated and impractical car brake which they never placed upon the market. Their application was rejected in 1847. *Thereafter, no proceedings were had in the application for five years.* In 1852, Bachelder & Thompson filed a new application illustrating an entirely different and practical mechanism. They represented that the *invention* of the later application, showing the practical device, was described in the five years abandoned application illustrating the impractical device, and on that

premise secured claims dominating the work of more praiseworthy inventors who had developed and placed their devices upon the market while the first application of Bachelder & Thompson stood abandoned.

Justice Bradley held that the Bachelder & Thompson patent was not infringed but supplemented his decision by an observation including the following statement:

> "The law does not permit such enlargements of an original specification which would interfere with the other inventors who have entered the field in the meantime. . . ."

It thus appears that *Railway Company* v. *Sayles* has no application to the present case. Kane's original and divisional applications always disclosed the same device —the meritorious device which went on the market in 1909, which saved the Webster Company and which revolutionized ignition for single cylinder engines. Kane's applications were co-pending and neither of them was ever abandoned. In fact, each of them was vigorously prosecuted at all times during its pendency in the Patent Office.

Kane, by his claims 7 and 8, merely secured a monopoly on that meritorious invention which he made available to the public in 1909 and which he fully illustrated in his original application filed February 2, 1910.

The Contracts.

Emil Podlesak was in the employ of plaintiff, Webster Electric Company, from August, 1909, until May, 1915, serving successively as engineer, superintendent, works manager, and secretary, and as a director (R. Vol. 1, 140). With him was closely associated his brother, Henry J. Podlesak, and both separately and jointly the two brothers made and patented various inventions relating

to magneto ignition, and owned equal shares in all of their patents. *The Podlesak inventions made subsequent to 1909 were all in the nature of detailed improvements on Kane's fundamental invention of April, 1909.*

In the period between 1908 and 1914, the Webster Company had been licensed under certain *inductor magneto* inventions of the Podlesaks (contract of Nov. 2, '08, R. Vol. 1, 39). When Kane produced his unitary equipment, these strictly *magneto* inventions of the Podlesaks were incorporated therein because the Webster Company has always regarded the inductor type magneto embodying these inventions to be the best (though not, of course, the only) magneto which can be included in Kane's unitary equipment. Up to 1914, the Webster Company was content, so far as the *Podlesak improvements on the Kane invention* were concerned, to work under the unwritten "shop rights" which the relations of the parties created.

But by the early part of 1914 the Webster Company began to enjoy success and to foresee great success and knew that its success was or would be coveted by the Sumter Company and other competitors. No patent had issued to cover the fundamental invention of 1909,* so the Webster Company did the only rational thing under the circumstances: it had its unwritten "shop rights" reduced to writing and had them coupled with the right to prevent competitors from appropriating those Podlesak *improvements on the Kane invention* which were covered by issued patents or were about to be covered by issued patents.

On February 5, 1914, the contract of 1908 was cancelled and two new contracts were made, these new contracts being Exhibits C and D to the bill of complaint herein

* Neither the Kane patent nor the Milton patent had issued in February, 1914.

(R. Vol. 1, pages 48 and 52). These contracts simplified the computation of royalties which had been a difficult matter under the 1908 contract, but obviously the *paramount purpose of the substitution of contract D for the unwritten "shop rights" was to enable the Webster Company to protect itself against piracy of the Podlesak improvements* under which the Webster Company had theretofore enjoyed nothing but unwritten "shop rights."

Exhibit C (substituted for the contract of 1908) left the Webster Company with an exclusive license under these patents which related to the preferred or "tripolar" type of inductor *magneto,* that is to the details of the magneto generator itself. Under that exclusive license complete provision was made for the Webster Company to maintain suits for infringement of the patents, and the Podlesaks were to be paid certain royalties. The final paragraph of this agreement provided that it shall "extend to and be binding upon the heirs, assigns and legal representatives of the parties of the first part" (who were the Podlesaks) and "the successors and assigns of the party of the second part" (which was the Webster Electric Company).

There is no question about the fact that the Podlesaks could not authorize anyone to make, use or sell the devices covered by the patents in Exhibit C, and that their assignment of the contract would carry nothing more than the naked legal title to the patents, and the right to receive royalties from the Webster Company, and the right of reversion upon default by the Webster Company.

The contract Exhibit D (which replaced the unwritten "shop rights") relates to six other patents or applications of the Podlesaks,* among which are the two

*Four of these, including No. 1,101,956 and reissue No. 13,878, cover the refinements of the Kane invention which Emil Podlesak had applied to the Webster Company's commercial device.

patents in suit which have been actually infringed, No. 1,101,956 and reissue No. 13,878. All of the patents included in Exhibit D relate to ignition equipments adapted to include the inductor magneto which plaintiff was granted the exclusive right to make and sell by Exhibit C. Exhibit D provided that the devices included within it were to be made and sold in connection with the devices manufactured under Exhibit C, but it provided for the payment of additional royalties if the Webster Company sold those devices covered by Exhibit D separately from those covered by Exhibit C, in which case it was to pay a royalty of 5 per cent. of all money received.

Contract E (R. Vol. 1, 57) subsequently provided a simpler basis for computing royalties under both contracts C and D but had no other purpose or effect.

All of the Podlesak patents and the contracts C, D and E were assigned from the Podlesaks to the Splitdorf and Sumter Electrical Companies jointly by contract Exhibit F (R. Vol. 1, 60) on September 4, 1915, when the Splitdorf and Sumter Companies had, for some time, been carrying on their admittedly infringing operations. It is solely upon their purchase of the contract D that the Splitdorf and Sumter Companies base their defense against the Podlesak patents.

Judge Sanborn's conclusion was (R. Vol. 1, 802):

> "To attempt to authorize a formidable competitor like the Splitdorf Company, one of the very dealers to whom plaintiff was given the right of license, after the latter had built up an enormous business, to profit by that business, is utterly foreign to the spirit and purpose of the contract. The assignment should be restricted to the legal title and right to royalties, accounts and inspection, and the power of the plaintiff to sue for infringement without joining the assignee be recognized."

Plaintiff has always admitted that the assignment from the Podlesaks to the Splitdorf and Sumter Companies, as Judge Sanborn held, transferred the legal title to the patents and the right to receive royalties from the Webster Electric Company. It also transferred the right of termination of the license if the Webster Company should default in royalty payments, in which event the right to operate under the patents and all of the other rights of the Webster Company would revert to the Splitdorf Company and the Sumter Company. That this was a highly profitable purchase is amply evidenced by the fact that the Splitdorf and Sumter Companies paid the Podlesaks only $65,000 for the assignment of these patents and contracts, while since the assignment those companies have received over $112,000 in royalties from the Webster Electric Company.

Judge Sanborn Was Correct in Holding that the Transfer of Contract D From the Podlesaks to the Splitdorf and Sumter Companies Could Not Authorize the Latter Companies to Operate Under the Podlesak Patents.

In the granting clause of contract D (R. Vol. 1, 53) the Podlesaks

> "do hereby grant unto the party of the second part, (Webster Electric Company) a shop-right and license to manufacture, use and sell the inventions or improvements, and each and every one of them, described, set forth and claimed in said patents, Nos. 1,022,642, 1,055,076,* 1,056,360 and said applications, Serial Nos. 734,143,† 668,153 and 639,738, and any division or divisions thereof, within and through-

* This patent was reissued as No. 13,878, here in suit.

† This application became patent No. 1,101,956, here in suit.

out the United States of America and Territories and Possessions thereof, for and during the term of said patents or any of them; and the parties of the first part (the Podlesaks) agree that they have good right and lawful authority to grant said shop-right and license, and that they have not heretofore parted with any right, license or privilege inconsistent therewith and that they will not, while this shop license to the party of the second part is in force, **give or grant** shop licenses to **others** to make, use or sell herein said inventions, expressly reserving, however, the right to **themselves** to make, use and sell the herein said inventions."

It seems to us and it seemed to Judge Sanborn perfectly clear that this granting clause, after licensing the Webster Electric Company, effectively provided that while the Podlesaks "themselves" should also have the right to make, use and sell the patented devices, they could not authorize "others" to do so.

If contract D had been a simple license from the Podlesaks to the Webster Electric Company there would have remained in the Podlesaks the right to operate under the patents and to authorize others to do so. That, however, was not the desire of the parties, and the quoted language of the granting clause is entirely incapable of being cast aside as surplusage, as our adversaries would like to treat it. It is obvious that the Webster Electric Company did not object to what it considered would be the insignificant activities of the Podlesaks themselves, but that it did desire clearly to preclude the possibility of substantial competition by others. The granting clause, therefore, was made to state very clearly and expressly that the right to operate under the patents was limited to the Podlesaks "themselves" and could not be extended to "others."

Our opponents argue that plaintiff will not be injured

by the interpretation of the contract for which they contend. They say that plaintiff was willing to have any other one concern beside itself operate under these patents, and that their interpretation of the contract merely substitutes the competition of one of the defendants, the Splitdorf Electrical Company, for the activities of the Podlesaks. That is far from the fact. Plaintiff never was and never has been willing that any one other than itself should have a right to operate under these patents, except the Podlesaks "themselves"; and the contract expressly so provides.

The Podlesaks have never, in any way whatever, exercised this right reserved to "themselves" to utilize these inventions. They have been content, *as anticipated by the Webster Company,* to receive their royalties from the Webster Electric Company which up to the time of trial aggregated over $95,000 (R. Vol. 1. 474). On the other hand, the transfer from the Podlesaks to the defendants purported to authorize not only the Splitdorf Electrical Company but also the Sumter Electrical Company to operate under the Podlesak patents; it attempted, entirely contrary to defendants' present argument, to substitute two large, resourceful and going corporations for the inactive Podlesaks "themselves." Furthermore, as the infringing activities of the defendants increased, a third corporation, The Sumter Electrical Company of Illinois, was authorized by them to operate under these patents, and it, in turn, had various parts of the infringing devices made by different factories in Chicago and then authorized engine manufacturers to assemble the parts to form the infringing apparatus (R. Vol. 1, 416-425).

It is entirely apparent, therefore, that the defendants have attempted to create the very situation, which the language of the granting clause of contract D expressly

prohibited. The Webster Electric Company was willing that the Podlesaks "themselves" should operate under these patents because it had known the Podlesaks for years and knew them to be individuals without an organization or resources enabling them seriously to compete with the Webster Electric Company. The Webster Company was entirely unwilling to have either one or any "others," like its most formidable competitors, the Splitdorf Electrical Company and the Sumter Electrical Company, substituted for the Podlesaks and authorized to operate under the Podlesak patents, and thus destroy every shred of value which the Webster Company obtained under its contract. And the granting clause expressly so provided.

Defendants' Contention Violates Not Only the Express Language, But Also the Whole Intent of Contract D.

The whole intent of the Podlesaks and the Webster Electric Company as expressed in the other provisions of contract D demonstrates that the exact language of the granting clause was intended to prevent precisely the situation which defendants are seeking to create.

The granting clause of contract D gave to the Webster Electric Company the "license to manufacture, use and sell the inventions or improvements, and each and every one of them, described, set forth and claimed" in the included patents. The second paragraph (R. Vol. 1, 53) provided that any suits for infringement of these patents should be brought by Webster Electric Company entirely at its own expense, and the Podlesaks

> "hereby appoint the attorney for the party of the second part as their agent and attorney for the purpose of joining them as parties complainant where necessary or desirable, in any suit which the party of the second part may wish to bring on account of

the infringement of any of said letters patent or any patent which may be granted upon their aforesaid applications, the said attorney for the party of the second part to have the power to execute as the attorney and agent of the parties of the first part any papers which may be necessary or convenient to the commencement and maintenance of any such suit."

Paragraphs 8 and 9 of Contract D (R. Vol. 1, 56) provided that the Webster Electric Company, with the approval of the Podlesaks, shall have the right to grant licenses "to makers of or dealers in gas engines and gas engine accessories."

In the granting clause the Podlesaks agree "that they will not, while this shop license to the party of the second part is in force, *give or grant* shop licenses to others to make, use or sell the hereinsaid inventions."

It is obvious from these provisions that the Webster Electric Company was given the right to make, use and sell under the patents included in contract D; that the Webster Electric Company was given the entire control of suits against infringers; that the Webster Electric Company was given the power, with the approval of the Podlesaks, to grant licenses "to makers of and dealers in gas engines and gas engine accessories," such as the Splitdorf and Sumter Companies; and that the Podlesaks agreed not to grant licenses under any of these patents to others than the Webster Electric Company.

It is clearly apparent, therefore, that these provisions of this contract gave to the Webster Electric Company not only the right to make, use and sell these inventions, but the right entirely to control the use of these inventions by others, either by suing them for infringement, or, if they were makers of gas engines or gas engine accessories, by licensing them if it was desirable.

Clearly no right under any of the Podlesak patents existed anywhere outside of the Webster Electric Com-

pany except that right reserved to the Podlesaks "themselves" to operate under the patents. That right was made personal to the Podlesaks by the express language of the granting clause which reserved this right to the Podlesaks "themselves" and at the same time provided that they would not authorize "others" to make, use or sell the inventions.

The Power of Exclusion Under the Podlesak Patents Is in Plaintiff.

Defendants in the Court of Appeals, based much of their argument on the assertion that Judge Sanborn was mistaken in holding that the Podlesaks "retained no power of exclusion whatever; that was in the plaintiff." They seek to substantiate this assertion by saying that plaintiff itself has admitted, by bringing infringement suits in the names of the Podlesaks, that the Podlesaks did retain the power of exclusion under these patents.

Judge Sanborn's holding was correct and defendants' argument is faulty. Contract D put into the Webster Electric Company the whole power of controlling operations under the Podlesak patents except by the Podlesaks "themselves." The contract provided (R. Vol. 1, 54) that suits for infringement should be brought entirely at the expense of Webster Electric Company and the Podlesaks gave the Webster Electric Company a clearly irrevocable power of attorney to take any action in their names which the Webster Company might think necessary or desirable in any suit which the Webster Company might wish to institute. The legal title to the patents remained in the Podlesaks so that they were proper and necessary parties to a suit for infringement. The absolute power to institute and control suits, however, was granted by the Podlesaks to the Webster Electric Com-

pany. Their names might be used as a formal matter but the entire control of the use of their names and the institution and management of infringement suits was granted to Webster Electric Company. Clearly the Podlesaks "retain no power of exclusion whatever; that was in the plaintiff."

In the summer of 1915, when the Sumter Electrical Company's infringement of these patents commenced, a bill of complaint sworn to by Emil Podlesak himself was immediately filed on August 21st, 1915 (R. Vol. II, 31). It was only fifteen days later that the Podlesaks sold their patents, their contracts and themselves to the Splitdorf Electrical Company and the Sumter Electrical Company. If defendants' present contention is sound, that South Carolina suit might have progressed through the trial court and through the Court of Appeals and through a subsequent accounting and at any time, up to the very minute of entering the final decree, the Podlesaks could have rendered the whole litigation futile by the simple expedient of transferring their contracts as they have done to the defendants. The possibility of such a result does violence to common sense and is repugnant to the express provisions of contract D.

Defendants' Argument That the Podlesaks Could "Assign" What They Could Not "Give or Grant" Is a Mere Play Upon Words.

We have then, in contract D, the grant to Webster Electric Company of a license under the Podlesak patents, and of the absolute right to control litigation for infringement of those patents, and of the right to license such manufacturers as these defendants, with the endorsement of the Podlesaks; and we have a reservation to the Podlesaks "themselves" of the right to operate

under these patents, coupled with their express covenant that they will not give or grant licenses to "others."

What is the function, purpose and effect of such an agreement? Does it not plainly and unequivocally mean to any one that the owners of the patents were not only granting a license to the Webster Electric Company but were agreeing that no other person except themselves should, during the life of the grant, obtain from the grantor under any circumstances the right to make, use or sell the patented devices? Would it not take language of the clearest and most unambiguous character to contradict this manifest intention and to lead to the conclusion that the grantors can do indirectly what they covenanted not to do directly?

Yet this is exactly the position of opposing counsel. They say that the Podlesaks, although they agreed to grant no licenses to others, did not at all mean that they could not create in others the right to make, use and sell. Others could be given the right to make, use and sell, if only the scrivener of the instrument, by which such right was created, was careful not to use the word "license." That is to say, it was not the substance but merely the form about which the parties were contracting. The Webster Electric Company, so defendants argue, did not care whether formidable competitors should be put on a parity with it or be given a preference over it, so long as the instrument for the purpose was called anything other than a "license." Could this *word* be avoided, they say, the Webster Electric Company would be completely satisfied.

Time was, in the infancy of our legal system, when arguments of this character frequently prevailed and when life and property turned upon *words* employed and no effect was given to *intent*. But legal progress has advanced beyond those dark ages and now the meanings

of language is heeded by the courts far more than the form.

It is obvious that in entering into contract D the parties intended that the Podlesaks should give the Webster Electric Company the right to make, use and sell, and that no one else should ever obtain from the Podlesaks, the right to make, use and sell.

The Assignment Clause Cannot Completely Nullify the Contract, as Defendants Contend.

But, so defendants argue, the express language of the granting clause and the whole intent of the parties as expressed through out the contract was rendered nugatory by the provision at the end of the instrument that "this agreement shall extend to and be binding upon the heirs, assigns and legal representatives of the parties of the first part, and the successors and assigns of the party of the second part." In other words, defendants argue that, although the Podlesaks expressly agreed not to license others to operate under these patents, they nevertheless may accomplish precisely the same object by assigning the right which the Podlesaks reserved to "themselves." Now an assignment can be made jointly or trebly or to an indefinite number of persons, and although defendants' counsel argue that the formidable Splitdorf Company has merely been substituted for the inactive Podlesaks, that argument is not true. The transfer from the Podlesaks was made to the Splitdorf Company and Sumter Company jointly, and they, in turn, have attempted to authorize still other concerns to use these patents under their protection. By the simple expedient of calling the instrument an *assignment* they attempt to do precisely the thing which they admit the Podlesaks covenanted not to do.

We submit that the expressed intention of the parties to a contract cannot be so severely mutilated through the instrumentality of visionless literalism. Persons of sound mind could not have intended that the Podlesaks were free to create by way of assignment what they were so clearly precluded from creating by way of license. The reserved right of the Podlesaks was a purely personal right by its very nature, and by the expressed intention of the parties that the right to do those things which the Webster Electric Company was authorized to do and which the Podlesaks reserved to "themselves" should not be granted to "others." This plain intention cannot be held to have been nullified unless the language of the contract necessarily compels such an interpretation of the assignment clause. If this last clause would be meaningless without such construction—that is, if not so construing it would be the equivalent of omitting it—then there would be something to the position of opposing counsel, but as Judge Sanborn pointed out, the assignment clause in contract D is found in exactly the same language in contract C, executed on the same day. It is agreed that the effect of the clause in the exclusive license Exhibit C was the permission to the Podlesaks to transfer the legal title to the patents, and the right to receive royalties, and the right of reversion of the Webster Company's rights if the latter should default. It is obvious that this was also its only function in Exhibit D. It was not intended to authorize the Podlesaks to transfer the right clearly reserved to "themselves" personally and thus render meaningless all other provisions of the contract.

There are other provisions of contract D equally personal to the Podlesaks and equally nonassignable. The second paragraph of the contract (R. Vol. 1, 53) provides that the Podlesaks will assist each other in the prosecu-

tion of patent applications, and in interference proceedings, and in any suit for infringement of any of the patents included in the contract. The Podlesaks know every detail of the conception and completion of their own inventions, and no one else could possibly disclose the facts and give the testimony known only to the Podlesaks personally. The applications have matured into patents, and interferences with the issued patents are unlikely, but it still may be vital to plaintiff to have the personal co-operation of the two Podlesaks in infringement suits, if it should become necessary to establish that these inventions were made by the Podlesaks earlier than by an asserted rival. Obviously no one but the Podlesaks themselves could fulfill this obligation of the contract.

Again, the eighth paragraph provides that the Webster Company, with the approval of the Podlesaks, shall have the right to license manufacturers of gas engines and gas engine accessories to make devices under the patents of contract D, but to be used only in connection with the magneto generators which plaintiff was exclusively licensed to make by contract C. Assume that an engine manufacturer desires to buy only the magneto generator and to manufacture his own plug-bracket and actuating mechanism of the Podlesak patents in suit. The Webster Company might well license him under the patents of contract D, provided he agreed to buy the magneto generator itself from the Webster Company. Under these circumstances the Podlesaks would have a real incentive to approve such a license to the engine manufacturer, for they would have everything to gain and nothing to lose by so doing. By approving such a license the Podlesaks would promote the sales of Webster magneto generators on which they would be paid large royalties under contract C. If they did not approve the license the engine manufacturer would probably refuse to buy either the complete

equipment or the magneto alone from the Webster Company and thus the Podlesaks would lose the royalties on the magneto generators which he otherwise would have purchased.

The Splitdorf Company and the Sumter Company, on the other hand, have no incentive to approve such a license. Instead of having an incentive to approve such a license, the Splitdorf Company and the Sumter Company would certainly refuse their assent. The Podlesaks have never been engaged in the manufacture of magneto generators, but the Splitdorf Company and the Sumter Company manufacture and sell large quantities of magneto generators in competition with Webster Electric Company, and were engaged in this business even prior to the commencement of the Webster Company's business. If the Webster Company were to negotiate such a license to an engine manufacturer and submit it to the Splitdorf and Sumter Companies for their approval, what would those companies naturally do? They certainly would not approve the license, despite the fact that they would receive a royalty on the magnetos sold by the Webster Company, because the license would prevent them from making the greater profit which they would realize if they were free to sell their own magnetos to the engine manufacturer. Undoubtedly the Splitdorf and Sumter Companies would immediately send to the engine manufacturer a salesman who would point out that if he bought the Webster equipment he would have to pay a price high enough to include the royalty payable by that company. On the other hand, the salesman would offer him the defendants' magneto, on which no royalty would be payable, at a price so low that the engine manufacturer could not afford to purchase his equipment of the Webster Company. In every instance, therefore, the Splitdorf and Sumter Com-

panies would certainly refuse to approve licenses submitted by the Webster Company, and would take advantage of the submission of such licenses to defeat sales by the Webster Company and effectuate sales of their own magnetos.

The reserved right to the Podlesaks "themselves" to utilize these inventions, and all of the other features of this contract except the legal title to the patents and the right to receive money as royalties and the right of reversion, are so clearly and certainly personal to the Podlesaks that their nonassignability is not in the least altered by the repetition in this contract of the assignability clause of the companion contract.

If the Podlesaks, by assigning this contract, can authorize the Splitdorf and Sumter Companies to utilize these inventions, what becomes of the provision that they will not grant licenses to others than the Webster Electric Company? What becomes of the provision that the Webster Electric Company may institute and control suits against infringers? What becomes of the provision that the Podlesaks appoint the attorneys of the Webster Company their attorneys to join them in suits for infringement, and to execute and file any necessary or desirable papers in their name—a clearly irrevocable power coupled with an interest, but which the Splitdorf and Sumter Companies have presumed to revoke? What becomes of the provision that the Webster Company shall initiate and with the approval of the Podlesaks may effectuate licenses to makers of gas engines and gas engine accessories—the very class of which the Splitdorf and Sumter Companies are members?

The attempted assignment of the right to utilize these inventions, from the Podlesaks to the Splitdorf and Sumter Companies, is so palpably a fraud upon the contractual rights of the Webster Electric Company, and

is so obviously repugnant to the intention of the parties as expressed in the contract, that defendants' contention that this attempted assignment was valid for that purpose is without any justification.

An entirely analogous situation was before the courts in *Central Brass & Stamping Co.* v. *Stuber,* 220 Fed., 909. In that case the patent in suit was issued to Nelson and Stuber, who made a contract that Stuber should be the exclusive manufacturer, and Nelson the exclusive seller, with the provision that if Stuber failed to manufacture in desired quantities, Nelson should acquire the exclusive right to manufacture. It was further provided that the parties, "their heirs or assigns" should not make any arrangement enabling others to manufacture the patented devices. Nelson assigned his interest in the patent and all of his rights under the contract to plaintiff.

Aside from the defense that he was a half owner of the patent and could not be sued, Stuber also maintained that the contract was personal to Nelson, and that his assignment of it could not convey his rights to plaintiff. The court sustained this defense, saying:

> "Nelson being the patentee and thoroughly advised as to the merits of the patented device, and also being so solicitous of its success as to take advantage of the provision of the contract in that respect, might well have been considered by the appellees as best equipped to push the device upon the market and make the investment remunerative. They were entitled to his personal efforts in that behalf. As is said in *Arkansas Smelting Company* v. *Belden Mining Company,* 127 U. S., 387, 8 Sup. Ct., 1309, 32 L. Ed., 246:
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> > 'Every one has a right to select and determine with whom he will contract, and cannot have another person thrust upon him without his consent.'

"And again:

'The rule upon this subject, as applicable to the case at bar, is well expressed in a recent English treatise. "Rights arising out of contract cannot be transferred if they are coupled with liabilities, or if they involve a relation of personal confidence such that the party whose agreement conferred those rights must have intended them to be exercised only by him in whom he actually confided." Pollock on Contracts (4th Ed.) 425.'

"(3) It will be noted that the contract gives the right to manufacture, and to sell. It nowhere conveys exclusive use. Nor can the right to exclusive use be implied from the facts of the case. **It does use the terms 'assigns' and 'heirs,' but, as was said by the court in** *Wooster* v. *Crane, etc.*, 73 N. J. Eq. 22, 66 Atl. 1093, **the contract was not made assignable by the use of those terms as to its unexecuted subject-matter, if in fact it was a personal contract.** If it be contended that the contract worked a sale of the whole patent, or of appellees' interest therein, it is sufficient answer to say that failure to convey exclusive use, and the provisions of the contract, and especially that of clause 7 thereof dealing particularly with regard to Nelson's duties to appellee in the premises, clearly bring it within the rule as to non-assignability of a personal contract; and we therefore concur in the decision of the District Court that appellant took no rights through the assignment. *Waterman* v. *Mackenzie*, 138 U. S. 233, 11 Sup. Ct. 334, 34 L. Ed. 923; *Excelsior Wooden Pipe Co.* v. *Seattle*, 117 Fed. 140, 55 C. C. A. 156; *Pope Mfg. Co.* v. *Gormully Mfg. Co.*, 144 U. S. 224-251, 12 Sup. Ct. 632, 637, 641, 36 L. Ed. 414, 419, 420, 423."

The same conclusion, entirely contrary to defendants' contention here, was reached in the following cases:

Swarts v. *Narragansett Electric Lighting Co.*, 28 R. I., 436, 59 At., 111;

Montgomery v. *DePicot*, 153 Cal., 509, 96 Pac., 305;

Wooster v. *Crane & Co.*, 66 Atl., 1093.

In the Swarts case the court said:

"We did not, and do not now, consider that the use of the word 'assigns' was significant of the intention of the parties or the construction of the contract. The words may have force without reference to the construction as between the original parties. Money earned under a contract for personal service, or an *executed* contract, can be assigned, and the amount due recovered under the promise of the agreement; **but that is a very different matter from an assignment of an executory contract as a whole.** The mere use of a word descriptive of a person who may take an interest in the contract under certain circumstances does not control the construction of the contract itself. *For example, if the words 'executors and administrators' were in a contract to paint a picture, it would not be contended that the executor of the artist could paint it. With equal reason the mere use of the word 'assigns' does not make a contract assignable, when the contract calls for personal service.*"

The court, in the Montgomery case, held:

"Whether a given contract is assignable or not is a question of construction. Now, as to the contract at bar. The reading of it discloses that by its terms it was assignable. It provides for a conveyance by defendants of the property to 'said party of the second part (Bradshaw), his heirs, executors and assigns,' upon the fulfillment of certain conditions by Bradshaw or his 'heirs, executors or assigns.' These, however, are general provisions of the contract and are not conclusive upon the subject of assignability. The use of such language in a contract is not in every case absolutely determinative of its character. (*Swarts* v. *Electric Light Co.*, 26 R. I., 436, 59 Atl. 111.) **Notwithstanding its use the intention of the parties must be gathered from a consideration of the terms and entire tenor of the contract** and if upon such consideration it appears that the contract calls for the performance of an obligation purely personal in its nature, the rule in general is that the obligation, if personal, cannot be assigned without the

consent of the party to be benefited. (*Bethlehem* v. *Annis*, 40 N. H. 34; 77 Am. Dec. 700; *Ice Co.* v. *Potter*, 123 Mass. 28; 25 Am. Rep., 9; *Arkansas, etc. Co.* v. *Belden Mining Co.*, 127 U. S., 379; 8 Sup. Ct., 1308.)"

In *Wooster* v. *Crane*, the opinion was delivered by Judge Pitney (Mr. Justice Pitney of the Supreme Court), in the course of which he said:

"It seems to me that these principles, thus illustrated by adjudged cases, are conclusive in favor of complainant, and I must advise a decree rescinding the contract, unless another point made by the defendant has some substance, viz., that the contracts in question by their terms are made assignable. One contract, dated the 19th day of February, 1900, is expressed to be between Lizzie E. Wooster and Crane & Co., and their successors and assigns, a corporation, Shawnee County, State of Kansas. Then, after recitals in this clause, 'therefore this agreement witnesseth that the said Lizzie E. Wooster, having full power to make this grant, hereby agrees that the said Crane & Co. have the exclusive right to publish and print the said books or any revised edition thereof during the full term of copyright thereof and during the full term or terms of any renewals of said copyright.' Then Miss Wooster agrees to defend the copyright and to bear the cost of illustration and metal plates, and Crane & Co. have the right to sell editions or duplicate plates in foreign countries; and the contract proceeds: 'The above agreements are made with the understanding that the said Crane & Co. and their representatives and assigns shall in substantial good faith keep and perform their agreement hereinafter contained.' Then follows the covenants on the part of Crane & Co. that they will publish the books and pay Miss Wooster 10 per cent. of the cash receipts as royalties, and will render semi-annual statements. The next agreement is that of the 15th of March, 1900, in which the parties are described as in the previous contract, and then after a recital of the books, Miss Wooster agrees that Crane & Co. shall have the exclusive

right to publish and print the said books or any revised edition thereof during the full term of the copyright thereof, and during the full term and terms of any and all renewals of said copyright. Then, like the previously recited agreement, there is a clause that these agreements are made with the understanding that Crane & Co. and their legal representatives and assigns shall keep and perform that agreement. Then comes the contract by Crane & Co. to publish and pay royalties, etc. *Upon careful consideration I am unable to give to the presence of the word 'assigns,' as above quoted, the force the defendant claims for it.* I am unable to construe it as a contract on the part of Miss Wooster to deal with anybody to whom Crane & Co. may assign that contract, and to accept such assignee as paymaster. It will be observed that, wherever there is a convenant on the part of Crane & Co. to do anything on its part, the weight of the covenant is placed entirely upon Crane & Co. *Upon the whole, I am of the opinion that the only effect of the word 'assigns' is to give the right which Crane & Co. have without that word, viz.: that their assignee would take whatever interest they had in the contract up to the time of the assignment, precisely as in the case of one partner selling out his interest in the partnership.* The result is that I think that the complainant is entitled to a decree of recision."

Plaintiff submits, therefore, that the right of the Podlesaks "themselves" to make, use and sell the devices covered by the contract Exhibit D was entirely personal to them, and that the assignability clause did not authorize them to transfer that right, but related only to the legal title to the patents, and the right to receive money payments from the Webster Company, and the right of reversion upon default by the Webster Company. Any other interpretation of this contract would render entirely ineffectual every substantial provision in it, and would be directly contrary to the very clearly expressed intention of the parties to that contract.

This interpretation of the contract, which we say and Judge Sanborn has found is necessitated by its clearly expressed provisions, does not do violence to the assignability clause, as defendants would have that clause do to every other provision of the contract. Defendants say that this clause overrides the remainder of the contract and enables them to obtain by the subterfuge of *assignment* what the Podlesaks clearly agreed they would not *grant*. We say, and Judge Sanborn held, that it was never intended by the parties that the rights granted to the Webster Electric Company should be utterly destroyed by this simple expedient but that the assignment clause was intended to permit the conveyance of the impersonal rights under the contract so as to leave the contract as a whole still effective for its purposes. The assignment clause left the Podlesaks free to transfer and the defendants to acquire the legal title to the patents, and the right to receive royalties from the Webster Electric Company under the contract, and the right of reversion if the Webster Company should default. That these rights which we concede the Splitdorf and Sumter Companies acquired are highly valuable, and that their purchase of them was exceedingly profitable is evidenced by the fact that they have received from the Webster Electric Company since September 4, 1915, royalties of over $112,000 under a contract for which they paid the Podlesaks only $65,000.

The Essence of Contract D Is the Grant to the Webster Company of the Right to Exclude "Others"; the Exception As to the Podlesaks "Themselves" Must Be Construed in Favor of the Webster Company.

We have hereinbefore pointed out that the Podlesak *improvements* on the Kane equipment (covered by contract D) were designed or invented by Emil Podlesak while an employee and officer of the Webster Company, and were by him applied to the Webster Company's product to further the sale of the inductor magneto on which the Podlesaks were receiving substantial royalties under the license contract of November 2, 1908. Obviously, the Webster Company needed no written license merely to manufacture and sell the improvements which Podlesak, working for the Webster Electric Company, had designed to further the sale of the magneto on which the Podlesaks were receiving royalties under the contract of 1908.

Gill v. *U. S.*, 16 S. C. 322, 160 U. S., 426.

What the Webster Company did not have, and what it needed, was the right to prevent competitors, such as the Sumter Company, from appropriating the Podlesak improvements. The unwritten "shop rights," of course, included no right to exclude competitors.

The only substantial right which the Webster Company secured by contract D, which it did not enjoy by virtue of its unwritten "shop rights," was the right to exclude competitors from appropriating the Podlesak improvements. Therefore, the grant to the Webster Company of the right to exclude competitors must be regarded as of the very essence of contract D.

It appears from the face of contract D that the Podlesaks were willing to grant and did grant to the Webster Company the right to institute infringement

suits against competitors, the Podlesaks agreeing to grant no shop license which might be set up in defense of any such suit. Thus was the right to exclude competitors from appropriating the Podlesak improvements *granted* to the Webster Company. But the Podlesaks desired to make one exception out of this grant. Out of the grant, they excepted to "themselves" the right to make, use and sell the structures of the Podlesak improvement patents.. This exception was inserted for the benefit of the Podlesaks, presumably at the demand of the Podlesaks, and must be construed in favor of the Webster Electric Company.

It is a well settled law that exceptions or reservations inserted in a contract are to be construed against him for whose benefit they are made. (See 13 Corpus Juris, 546; *Wadsworth* v. *Smith*, 11 Me. 278; Page on Contracts, Vol. 11, page 1744; Leake on Contracts, 6th Ed., page 151; *Richmond* v. *Brandt*, 118 Ill. App. 624; *Capital City Bank* v. *Hilson*, 59 Fla. 215; *Burton & Company* v. *English & Company*, Law Reports, 12 Q. B. D., 218; *Bullen* v. *Denning*, 5 B and C 842, 108 English Reports 313; *Savill Brothers* v. *Bethell*, Law Journal Reports 1902, Chancery Division 652.)

Thus, in the Savill case, Lord Stirling said:

> "It is a settled rule of construction that where there is a grant and an exception out of it, the exception is to be taken as inserted for the benefit of the grantor and to be construed in favor of the grantee."

When the Court of Appeals construed the exception to "themselves" to mean "the Podlesaks and *their assigns*," it was reversing the time-tried rule of construction pertaining to exceptions. It construed the exception in favor of the *grantor* when precedent, and certainly the equities of this case demand that the exception be construed in favor of the Webster Company, the grantee.

If the parties had ever understood that the right of exclusion granted to the Webster Company by the Podlesaks was to be impotent against anyone but the Podlesaks "themselves," the reservation or exception could and should have so stated. The reservation or exception did not so state, and we submit that fairly (not necessarily strictly) construed it runs, as it says, to the Podlesaks "themselves" and not to *their assigns*.

If the words "and their assigns" had been included in the reservation or exception, the Webster Company would never have subscribed to contract D for the simple reason that the unwritten "shop rights" which the Webster Company had theretofore enjoyed would not have been improved upon at all by such a *written* "shop right agreement."

The Assignment From the Podlesaks to the Sumter and Splitdorf Companies Indicates That the Defendants Knew That the Excepted Right to the Podlesaks "Themselves" Was Not Assignable on the Face of Contract D.

When the Sumter and Splitdorf Companies acquired the rights of the Podlesaks under contract D, they well knew that the right in the Podlesaks "themselves" to manufacture and sell the inventions covered by that contract was *not assignable* under any reasonable interpretation of the contract itself. Therefore, they insisted that the Podlesaks *warrant* that the Webster Company at the time it executed contract D, "understood and agreed" that the right to manufacture and sell (on the face of the contract, personal) were, in fact, assignable.

Thus, in the assignment from the Podlesaks to the Sumter and Splitdorf Companies (R. Vol. 1, 64), we find the following:

"The parties of the first part hereby warrant that they have the right to manufacture, use and sell the inventions described and claimed in letters patent No. 1,022,642, April 9, 1912, No. 1,055,076, March 4, 1913, reissued February 9, 1915 as No. 13,878 and 1,056,360, March 18, 1913, also applications serial No. 734,143, filed November 29, 1912, serial No. 668,-153, filed December 27, 1911, and serial No. 639,738, filed July 21, 1911; . . . and that when they made and entered into said agreements with the said Webster Electric Company, it was understood and agreed on the part of the Webster Electric Company that the parties of the first part hereto reserved and retained to and in themselves all the rights, title and interest herein and hereby warranted and that the same were assignable by the parties of the first part at their own will and pleasure."

There is not a word in the record herein to the effect that the Webster Company at any time "understood or agreed" that the right of the Podlesaks "themselves" to manufacture and sell the inventions of contract D was assignable. In fact, the Webster Company has always understood and contended to the contrary.

If the excepted right of the Podlesaks "themselves" had been assignable on the face of contract D, the Sumter and Splitdorf Companies would have had no purpose in insisting that the Podlesaks *warrant* that the Webster Company, at the time contract D was made, "understood and agreed" that the right of the Podlesaks "themselves" to manufacture and sell was assignable. The fact is that the Sumter and Splitdorf Companies knew that the excepted right of the Podlesaks "themselves" was not assignable on the face of contract D, and such being the case they required the Podlesaks to *warrant* a collateral understanding which did not appear upon the face of the contract.

The Podlesaks warranted that which was untrue. The Webster Company never "understood and agreed" that

the excepted right to the Podlesaks "themselves" might be transferred to any such formidable competitor as the Sumter Company or the Splitdorf Company. The Sumter and Splitdorf Companies have infringed two of the patents covered by contract D and should account to the Webster Company for such infringement. If they were in any way misled into continuing* such infringement by the false "warranty" of the Podlesaks, they have their remedy against the Podlesaks.

The contract between the Sumter and Splitdorf Companies and the Podlesaks demonstrates that the defendant corporations were not bona fide purchasers without notice entitled to have the assignability clause of contract D construed in their favor with unconscionable literalism. The defendant corporations fully realized that assignability of the excepted right to the Podlesaks "themselves" was contrary to reason and the apparent intent of the contract; therefore, they required the Podlesaks to warrant a collateral understanding with the Webster Company—a collateral understanding which never existed.

Plaintiff Is Not Estopped to Assert the Kane Patent Against Defendants.

In the Court of Appeals counsel for defendants argued that it is inequitable for plaintiff to assert the Kane patent against defendants, because plaintiff is licensed under the Podlesak patents, the legal title to which has been acquired by defendants; and also because (so it is asserted) plaintiff has contracted with the Podlesaks to aid and assist them in interference proceedings relating to the Podlesak inventions and in any suit under any of the Podlesak patents. It seems to us that in making this

* They infringed before seducing the Podlesaks.

argument defendants are grasping at another and still less buoyant straw. The argument is unsound in law and has no basis in fact, for plaintiff never contracted to do anything of the sort.

In the first place, the argument is entirely irrelevant unless it properly could be held that the defendant companies have acquired the personal right of the Podlesaks "themselves" to operate under the patents. We have demonstrated earlier that such a conclusion is entirely unjustified. But even if that conclusion be assumed for the purpose of testing defendants' argument, that argument is unsound.

The Webster Electric Company was not the owner of the Podlesak patents and of course did not pretend to grant a license under them. The situation was precisely the reverse. The Podlesaks owned the patents and granted the Webster Electric Company a license which neither expressly nor by implication nor by any possible reason put upon the Webster Electric Company the burden of warranty to the Podlesaks of any right or title to do anything. The Webster Electric Company did not grant the Podlesaks any right, but merely received from the Podlesaks the right to make, use and sell under the Podlesak patents and the other protective rights stated in contract D. The reservation to the Podlesaks themselves of the right to make, use and sell under the patents which they owned is not a grant, but a limitation. It is in no way equivalent to the ownership of the patents by the Webster Electric Company and the grant of a license by it with a warranty of its title and right to grant that license. In the latter case the Webster Electric Company would have been granting immunity which it held itself out as entitled to grant, while the actual fact is that it received and is paying for immunity which the

Podlesaks and their assignees have warranted they had the right to grant.

In this connection defendants argue that plaintiff, by asserting the Kane patent, is denying the validity of the Podlesak reissue patent and is attempting to destroy the claims of that patent under which it is licensed. On the contrary, plaintiff is asserting the validity of the claims of the Podlesak patent and is continually paying very large royalties for its own immunity from suit under those claims.

It is, of course, true that the Webster Company, being a licensee under the Podlesak reissue patent, is impliedly (as well as expressly) estopped to deny the validity of that patent because it cannot act under its licensor's title and at the same time deny that title. The Webster Electric Company never has questioned nor is it now questioning the validity or scope of the Podlesak claims. It has continually been paying a royalty for the right to use the improvements upon the Kane invention which are covered by the Podlesak patent.

The Podlesak patent gave to Podlesak and his assignee merely the negative right to exclude others from making, using or selling the improvements or modifications covered by the claims of his patent. The patent gave him no positive right to make, use and sell anything. If the Kane patent had been issued to Kane personally the Podlesak patent would have prevented him from making, using or selling the Podlesak improvements; but, on the other hand, the Podlesak patent would have given no one any right to use those improvements in such a way as to infringe the Kane patent for the underlying invention on which those improvements were based. In taking a license under the Podlesak patent the Webster Electric Company merely purchased immunity from suit by the

Podlesaks for making, using or selling the Podlesak improvements, and the fact that the Kane patent was issued not to Kane personally, but to the Webster Electric Company, does not in any way alter the situation between the Podlesaks and the Webster Electric Company. The Webster Company still enjoys this immunity under the Podlesak patent, and is continually paying for that immunity and recognizing the right of the Podlesaks to grant it. At the same time, however, it has obtained the right by virtue of the Kane patent to say to everyone, including the Podlesaks and their assignees, that they shall not use the Podlesak improvements in such a way as also to use the fundamental invention on which those improvements are based. It is the cordially recognized duty of the Webster Electric Company not to dispute the validity of the Podlesak claims, but the simultaneous assertion of the Kane patent does not in the least question the validity of those claims, nor deny to the Podlesaks or their assignees the right to exclude every unauthorized person from making, using or selling the Podlesak improvements, except as limited by contract.

Precisely this situation was involved in the case of *Victor Talking Machine Co.* v. *American Graphaphone Co.*, 189 Fed., 359 (C. C., S. D. N. Y.), which was affirmed without opinion by the Second Circuit Court of Appeals at 190 Fed., 1023. Plaintiff in that case brought suit for infringement of the Johnson patent against defendant's acts under the Jones patent. Plaintiff was licensed under the Jones patent. The court found that Johnson was the prior inventor and that the Johnson patent was infringed by the Jones process, but that sustaining the Johnson patent did not invalidate the Jones patent. Defendant contended, as defendants contend here, that because of the license to plaintiff under the Jones patent defendant

had an implied license under the Johnson patent. The court held:

> "We come then to the question of the license. (4) It appears from the evidence of Mr. Johnson as follows:
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> " 'Q. 108. Do you know why the Victor Talking Machine Company took a license under the Jones patent No. 688,739? A. At the time the Jones patent was issued the Victor Company had a large quantity of goods on the market. We had no opportunity of avoiding this patent because we did not know of its existence. I therefore sought a license as a matter of insurance. I felt that such course was necessary because of the great value of the goods in question. I never infringe a patent or run the risk of an adverse patent decision where any other course is possible.'
>
> "On cross-examination (C. Q. 142) he made the same statement as to reason for taking the license. Johnson also says his patent here in suit, No. 896,059, had not issued when such license was taken, and that neither he nor the Victor Company had any assurance it would issue. The license whatever it was, is not in evidence. Its terms and conditions are not before this court. I am unable to see how a license under the Jones patent to the Victor Company taken before the patent in suit to Johnson had issued and when it was not known it would issue and obtained by Johnson for the Victor Company estops either the Victor Company or Johnson from asserting their rights under the Johnson patent when it did issue, even if its assertion amounts to a repudiation of the validity of the Jones patent. **I am not aware that a licensee under a patent is estopped to purchase a valid patent subsequently issued to another, and which, if asserted, shows the prior patent under which the license was taken to have been invalid and anticipated, and then assert such patent by suit against all infringers including the licensor. I am not pointed to any case so deciding. It is true that a licensee in a suit for royalties agreed to be paid cannot set up and prove as**

a defense the invalidity of the patent, assuming there is no outstanding decision against the validity of such patent. *United States* v. *Harvey Steel Co.*, 196 U. S. 310, 25 Sup. Ct. 240, 49 L. Ed. 492; *Kinsman et al.* v. *Parkhurst*, 18 How. 289, 292, 293, 15 L. Ed. 385; *Eureka Company* v. *Bailey Company*, 11 Wall. 488, 20 L. Ed. 209. **However, this does not decide that a licensee cannot become the owner of a valid patent covering the same invention after he takes his license and prosecute all infringers.** It would seem to me clear that, if Johnson had retained title to this patent here in suit, he could have prosecuted the Victor Company for infringing it, or any other company or corporation in which he held stock (assuming they actually infringed). His owning stock in such a corporation or a majority of the stock would not carry to it the right to use his inventions except with his consent. He could transfer his patent or inventions to the Victor Company as he did, and it seems to me the rights of that company under it are not affected by the license referred to, the terms of which do not appear. True, this suit is an indirect attack on the Jones patent. But Johnson had no property right in his invention which he could enforce prior to the issue of this patent in 1908. *Gayler* v. *Wilder*, 10 How. 477, 493, 13 L. Ed. 504; *Marsh* v. *Nichols Shepard & Co.*, 128 U. S. 605, 612, 9 Sup. Ct. 168, 32 L. Ed. 538. I have no doubt that the question of Johnson's priority of invention could have been set up in the suit referred to on the Jones patent. But it was not pleaded or made an issue and as the defendant there did not own the invention and the Victor Company did not, and Johnson was a mere stockholder and did not assume the defense, and the patent had not issued, I am unable to see that this complainant, the Victor Talking Machine Company, is estopped to assert the Johnson patent because of its position as licensee under the Jones patent."

Webster Electric Company of Wisconsin Is Clearly Entitled to the Benefits of the Contract and Subject to Its Liabilities.

In the courts below defendants argued that plaintiff has given to the assignment clause of contract D the interpretation which it now denies to defendants—that is, defendants argued that the plaintiff, Webster Electric Company of Wisconsin, claims a license under the Podlesak patents by an assignment of contract D from the Webster Electric Company of West Virginia, while at the same time denying to the Podlesaks and defendants the right of assignment of that contract. The two situations, however, are wholly different.

It is conceded by every one that the assignment clause cannot be simply struck out of the contract by interpretation, but we insist that it must be interpreted in accordance with the intention of the parties and in such a way as to be consistent with the other provisions of the contract. Even if the Webster Electric Company of Wisconsin were an organization distinct from the Webster Electric Company of West Virginia (which it is not) the fact would remain that if the Webster Electric Company of West Virginia could not transfer its license under the Podlesak patents, the assignment clause of the contract would be entirely meaningless and inoperative as to the grantee. That is, the license granted to the Webster Electric Company by the contract is the only right secured to it which it could transfer for value to an assignee and consequently unless that right was assignable, the assignment clause would be meaningless.

On the other hand, the language of the contract clearly makes the right of the Podlesaks to operate under the patents personal to "themselves," but the assignment

clause is still fully operative to enable them to transfer the title to the patents and the very valuable right to receive royalties from the Webster Electric Company. Unless the assignment clause enabled the Webster Electric Company to transfer its license, the clause would be meaningless. If that assignment clause enables the Podlesaks to transfer the personal right reserved to "themselves," all of the other provisions of the contract become meaningless. But the assignment clause remains effective and fully operative if it permits the Podlesaks to transfer the title to the patents and the right to receive royalties, while not permitting them to transfer their reserved personal right.

We further maintain, however, that the Webster Electric Company of Wisconsin is not dependent upon an assignment of the license granted in contract D but is entitled to the full benefit of that contract because it is the successor of the Webster Electric Company of West Virginia.

The amended bill of complaint alleges that the Webster Electric Company of Wisconsin is the successor of the Webster Electric Company of West Virginia (R. Vol. 1, 796). The plaintiff's business is the same business founded in 1905 by Mr. T. K. Webster, which was first operated under the name of Webster Manufacturing Company and which then became known as the Hertz Electric Company and which later was named Webster Electric Company, first as a corporation of West Virginia and subsequently as a corporation of Wisconsin. Throughout all of these changes of name, the president and guiding spirit of the organization has been Mr. T. K. Webster, and the business has been indistinguishably the same. The change from incorporation in West Virginia to incorporation in Wisconsin where the business

is located was made for the sole purpose of simplifying legal formalities. The stockholders remained identically the same; the directors and officers were the same; the factory and employees were the same; and the Wisconsin organization not only took over the entire assets of the West Virginia organization but also assumed all of the liabilities and obligations of whatsoever kind (R. Vol. 1, 435, 436, 707).

Under these conditions, it is settled that the license of the Webster Electric Company of West Virginia has passed to its successor, the Webster Electric Company of Wisconsin, even without an assignment.

Lane & Bodley Co. v. *Locke*, 150 U. S., 193; 14 Sup. Ct. Rep., 78.

Wilson v. *Wilson Corporation*, 241 Fed., 494.

In the latter case, the court said:

> "The suggestion that the right in and license to use said letters patent is a personal one, existing in favor of the James G. Wilson Manufacturing Co., and does not, in the absence of an express contract, pass to the defendant company, is not well taken, and cannot be maintained, for the reason that the defendant company is but a continuation of its predecessor company, and the complainant in good faith and fair dealing is as completely estopped from claiming the right here set up against one as the other."

The exercise of the license by the Webster Electric Company after its formal change of charter from West Virginia to Wisconsin has been acquiesced in by defendants. The Wisconsin company's bill of complaint was filed October 25, 1918 (R. Vol. 1, 184), and that bill alleged the rights of the Wisconsin company under the Podlesak contracts. The Splitdorf Company filed its answer by its solicitor G. H. Peaks and others on December 4, 1918 (R. Vol. 1. 198). On January 13, 1919,

however, the same George H. Peaks, as attorney for the Splitdorf Company, received and accepted from the Webster Electric Company of Wisconsin, a check for $6,728.90 for current royalties due under the Podlesak contracts (R. Vol. 1, 506, Vol. 11, 101). It further appears that Mr. Peaks forwarded this check to his principal, the Splitdorf Company; that it was deposited by the Splitdorf Company, and paid by the Webster Electric Company of Wisconsin in the regular course of business.

In any aspect of the matter, therefore, whether by acquiescence and estoppel, or by right of successorship, or by right of assignment pursuant to the terms of the contract, plaintiff is entitled fully to enjoy the rights and benefits granted by contract D. On the other hand, while the defendants are entitled to be recognized as the owners of the legal title to the Podlesak patents and of the very valuable right to receive large and continuing royalties from Webster Electric Company, and of the right of reversion upon default by the Webster Company, they are not entitled to exercise the personal right of the Podlesaks "themselves" to make, use and sell the patented devices and thus render purposeless all of the provisions of the contract. A conclusion to the contrary will be utterly destructive of the plain language and intent of the contract and of the business of the Webster Electric Company built up in reliance on that contract.

Defendants' Infringement Is a Tort Coupled With Malice—Plaintiff's Damages Should Be Trebled.

The Splitdorf and Sumter Companies had nothing to do with the invention, development or commercial introduction of the meritorious unitary ignition equipment covered by the Kane and Podlesak patents in suit. In

the year 1915 they simply pirated that equipment after the Webster Company had spent ten years in bringing it to a high state of perfection and into wide spread public favor. Seldom has the attention of the courts been directed to a more wanton theft of an important invention.

The defenses which the Court of Appeals recognized, and the only ones which we think will be urged in this court, are highly technical. If these technical defenses are found to be without merit, we ask your Honors to rule as to whether or not the Splitdorf and Sumter Companies (now one, R. Vol. 1, 491) shall be required to answer their torts in trebled damages.

Section 4919 R. S. authorizes the law courts of the United States to enter judgment for trebled damages in appropriate patent cases. It is well settled that our equity courts have the same power.

Waterman v. *McKenzie*, 11 Sup. Ct., 334, 337; 138 U. S., 152.

Root v. *Railway Company*, 105 U. S., 189.

The original and supplemental bills of complaint pray that defendants be required to respond in trebled damages (R. Vol. 1, 36, 197).

The appropriation by the Sumter and Splitdorf Companies of the equipment of the Kane and Podlesak patents was calculated and deliberate. In 1911 the Sumter Company marketed a non-unitary oscillating magneto equipment (addendum page 37) similar to the Webster Company's unsuccessful non-unitary equipment (addendum page 36) which was supplanted by the Kane invention in 1909. The Sumter Company abandoned its non-unitary oscillating equipment and in the years 1913 and 1914 sold a rotary magneto in competition with the unitary equipment of the Webster Company. During

1913 and 1914 the Sumter Company did all in its power to divert public favor from the Webster Company's patented equipment. One of the constituents of the patented equipment is an *oscillating magneto*. The Sumter Company denounced oscillating magnetos generally and the Webster Company's patented equipment in particular during 1913 and 1914. (See pages 38 to 41 of the addendum to this brief for reproductions of the pertinent parts of Exhibits 25, 26, 28 and 32.)

But after the Webster Company had firmly established its unitary equipment in the public favor, the Sumter and Splitdorf Companies in 1915 deliberately pirated that equipment. The slavish and wanton character of their infringement is apparent from a comparison of plaintiff's commercial device with the infringing devices. For instance, compare illustration of plaintiff's device on page 17 of this brief with the infringing device illustrated on pages 43 to 49 of the addendum hereto. The wanton character of the infringement is practically admitted for the defendants do not deny that their devices are described by *eighteen* claims of the patents in suit. Many of these claims describe plaintiff's commercial equipment in most minute detail. The defendant companies took structural details along with the generic invention. *All this occurred before the Sumter and Splitdorf Companies acquired any shadow of right or title under the Podlesak patents.*

The seduction of the Podlesaks for $65,000 in cash only aggravated an unconscionable infringement. By acquiring title to the Podlesak patents (and thereby becoming the recipients of large royalties from the Webster Company) the Sumter and Splitdorf Companies assumed a moral obligation to play fairly with the Webster Company. But, instead of dealing with the Webster Company, *their licensee*, with the good faith which equity and common decency de-

mands, they started out to destroy the Webster Company! By selling their infringing equipment (on which they paid no royalty) in competition with the Webster equipment (on which the Webster Company paid *them* a royalty) they very nearly put the Webster Company out of business. In the years since the trial, the Webster Company has barely been able to survive under the handicap imposed upon it by the unconscionable conduct of its licensors.

The malice which prompted the Sumter and Splitdorf Companies first to pirate the unitary equipment without a shadow of legal justification, and then to seduce the Podlesaks, is eloquently evidenced by a letter which passed between representatives of the defendant companies in the interim between the execution and the filing of the bill of complaint in the suit under the Podlesak reissue patent which was instituted against the Sumter Company on August 21, 1915 (R. Vol. 2, 98). The complaint was executed by Emil Podlesak on August 3, 1915 (R. Vol. 2, 36). On August 10, 1915, F. C. Manning (then sales manager of the Sumter Company and afterward general sales manager of the Splitdorf Company) wrote a letter to H. R. Van Deventer (treasurer and general manager of the Sumter Company and afterward connected with the Splitdorf Company). The most pertinent parts of this letter (which appears in full at page 98 of Volume 2 of the Record) read as follows (emphasis ours):

"August 10, 1915.

"Patent Matters.

"*Dear Van*:

"Although I am terribly rushed today trying to get things in shape to leave for Nebraska tonight, H. J. Podlesak dropped in and gave me a chance to find out what he knew about Webster's latest move. H. J. brought in his new oscillator to show me.

. . . . . .

"I asked H. J. what he knew of the patent Webster Company is claiming as anti-dating the Dixie. He says it is the old Varley idea which has been modified to some extent by the *original Webster Company's engineer, one Milton, the exploits of whom nearly wrecked the old Webster Mfg. Co.* This fellow, Milton, he says is the chap who got him (H. J. and his brother Emil) into the Webster organization because of Milton's infringement of the Podlesak patents, the matter having been finally adjusted by Podlesak giving the Webster people a license, their royalties to be not less than $5,000 per year. This year it will run to $12,000 he says.

. . . . . .

"*I think I have scared H. J. pretty well out of the idea of manufacturing his own new machine,* but from what I could get out of him today, it appears he has the right under his agreement with the Webster Co. to manufacture any of the Podlesak magneto outfits himself or to sell his patent with this right to manufacture and sell without interference from the Webster Electrical Co. *Brown* (General Manager of Webster Company) *would probably dispute this,* but he says his contracts with the Webster Co. will make clear his rights as stated in the premises. *Now, if Brown (the Webster people) gets too obstreperous, and if the bad feelings between Brown and Podlesak continues to brew as at present, I think H. J. and Emil will be in the frame of mind to consider such negotiations with us as would* **let us right into the Webster business, and with their line and the plug oscillator, we sure would be in shape to command the field.** I don't think Podlesak would expect anything like royalty he is collecting from the Webster Co., and besides this Brown is getting 5% on the gross sales, besides his salary.

It is pretty tough on me, with these matters coming up and without my knowing anything of what has been going on down in New York, beyond what you wrote me the other day, so I hope you will advise me fully in the premises. **I certainly wish you and Mr. Clement** (attorney for Sumter and Splitdorf Companies) **would get out here together as I believe we could have a very interesting 'round' with the Podlesaks.**

"Hope you can get some sense out of the above, all of which I have run off in a hurry and on an empty stomach too, as haven't had time to get out to lunch today.

"Hastily,

"FCM WK # 40."

The seduction of the Podlesaks followed promptly after the opening of negotiations as reported in this letter.

We submit to your Honors that the infringement here, both before and after the seduction of the Podlesaks, has been most wanton and was prompted by malice of the most reprehensible character.

If Judge Sanborn, who saw and heard all the witnesses in this case, had survived to enter a judgment following an accounting in this case, we are confident that he would have trebled the damages reported by the Master. The dignity of outraged justice and decency, the moral turpitude displayed by the representatives of the defendant companies and the grievous wrong which the Webster Company has suffered, demand that punitive damages be assessed in this case.

But Judge Sanborn is gone. Therefore, we submit that your Honors in affirming his decree can, and properly should, direct his successor on the bench to impose punitive damages commensurate with the outrageous conduct of the defendant corporations.

Conclusion.

The decree of the trial court, finding claims 7 and 8 of the Kane patent and the involved claims of the Podlesak patents valid and infringed, should be *affirmed*, and the decision of the Court of Appeals should be *reversed*, because:

(*a*) The Court of Appeals was not justified in de-

claring Kane's claims 7 and 8 void under the authority of *Chapman* v. *Wintroath*.

(*b*) Both courts below were right in holding that Kane's claims 7 and 8 describe a meritorious invention of the patentee.

(*c*) Our adversaries admit that Kane's claims 7 and 8 are infringed, if valid.

(*d*) The right to make, use and sell the invention of the Podlesak patents, which contract D reserves to the Podlesaks "themselves" was not assignable to the Sumter and Splitdorf Companies.

(*e*) Our adversaries are estopped to deny, and do not deny, the validity of the Podlesak patents, and do not deny that the inventions of these patents have been manufactured and sold by the defendant companies.

The actual damages sustained by plaintiff should be trebled in view of the wanton and malicious character of the infringement.

Respectfully submitted,

LYNN A. WILLIAMS,
ALBERT G. MCCALEB,
For Plaintiff-Petitioner.

ADDENDUM.

BOTH COURTS BELOW WERE RIGHT IN HOLDING THAT KANE'S CLAIMS 7 AND 8 COVER A NOVEL AND MERITORIOUS INVENTION.

The Purpose of the Kane Invention and Its Astounding Success.

Prior to the spring of 1909 the Webster Electric Company was manufacturing more or less experimentally and furnishing to its sole customer, the International Harvester Company, an oscillating magneto of which a specimen is in evidence as Plaintiff's Exhibit 11 (R. Vol. 2, 242, 388, 513). This device is illustrated at page 36 of this addendum (Ptffs. Ex. 13).

In that old type of equipment the magneto was fitted onto a boss on the side of the engine cylinder, and the igniter plug, in which were mounted the fixed and movable electrodes, was fitted into an opening in the cylinder at a point removed from the magneto. The movable electrode was operated by link mechanism connecting it with the magneto armature. The magneto was heavy and would not stay in position on the boss, so that any slight angular variation of the magneto on the boss would necessarily destroy the synchronism between the separation of the electrodes and the cycle of the engine, and between the separation of the electrodes and the recoil of the magneto armature (R. Vol. 1, 513, 514, 243). Mr.

Waterman, who at that time was the superintendent of the Milwaukee works of the International Harvester Company, testified (R. Vol. 1, 230):

> "Well, in a word the real difficulty of the older form was that it very soon and very seriously was out of order. It failed to work properly."

Mr. Waterman and other witnesses related the trials and tribulations that both the Webster Electric Company and the International Harvester Company had in those days with such equipment as Plaintiff's Exhibit 11—trials so serious that the Webster Electric Company seemed about to lose its only customer, and to fail entirely in its business (R. Vol. 1, 236, 243, 513, 514).

The International Harvester Company was receiving so many complaints about the Webster magneto that the subject was thoroughly investigated, and on March 15, 1909, Mr. Waterman wrote to the experimental department of the Harvester Company at Chicago a full report of the defects and troubles of the Webster magneto, concluding (R. Vol. 2, p. 1):

> "The Webster people should thoroughly overhaul the entire outfit, and they should correct troubles covered by these statements submitted above. It may possibly be satisfactory to continue shipment of the Milton magneto in accordance with present practice, but unless these unsatisfactory conditions are corrected we have good reason to consider it necessary to arrange for some substitute for this magneto for use on our engines,—entirely on the ground of defects developed."

At this juncture Mr. Kane invented the **unitary magneto ignition equipment** of his patent in suit. Suffice it to say here that after thoroughly testing the magneto furnished by Mr. Kane, Mr. Waterman reported to the experimental department on June 11, 1909, saying (R. Vol. 2, p. 3):

"The magneto as now presented seems to work well, and except for the fact apparatus of this nature is rather delicate when continuously exposed to dust and moisture, we see no reason why it should not prove reasonably satisfactory, electrically and mechanically."

The new magneto did prove abundantly satisfactory, the sales being in 1912, 8956; in 1913, 11,450; in 1914, 11,458; in 1915, 46,444; in 1916, 91,445; in 1917, 106,773, and in 1918, 129,785 (R. Vol. 1, 474). The original specimen of the apparatus invented by Mr. Kane is in evidence as Plaintiff's Exhibit 12 (R. Vol. 1, 231). In this device **the magneto and the igniter plug are no longer separated, but are brought into one unitary structure,** with no link mechanism intervening between the movable electrode and the armature shaft, such as existed in Plaintiff's Exhibit 11. The spark plug has a flange, which is bolted against the engine cylinder, and this flange carries an integral arm, on which the magneto and its associated mechanism are directly mounted. In this construction, when the armature shaft recoils, a yoke carried by it directly strikes an arm fixed to the movable electrode, thus causing an instantaneous separation of the electrodes in precise and inherent synchronism with the recoil of the armature. The magneto and the spark plug and the co-operating mechanism are all part of a single unitary structure. When it is necessary to clean the spark plug or to test or adjust the mechanism, the whole unitary structure may be removed, and its operations adjusted and its spark observed in the open, and it may then be put back on the engine with absolute assurance that it will function in operative position, precisely as it did when removed from the engine (R. Vol. 1, 451).

THE PRIOR ART.

Judge Sanborn found it unnecessary in his opinion to discuss the prior art as affecting the validity of the claims in issue of the Kane patent. It is perfectly obvious that any similarity the defendants may now seek to find between the Kane invention and prior patents is but knowledge after the fact. Kane and Milton and the other engineers of the Webster Electric Company, and also the engineers of the International Harvester Company, were undoubtedly better versed in the art of single-cylinder gas engine ignition in the spring of 1909 than any other engineers in the United States. Despite this fact, the problem of satisfactory magneto ignition seemed insoluble to all of them, and the Webster Electric Company was about to expire.

At this juncture, in April, 1909, Mr. Kane invented the unitary magneto ignition equipment disclosed in the patent in suit. The mechanical and commercial results were instantaneous and astounding. Probably your Honors have never had before you a case in which the proof, not only oral, but documentary, showed an invention so remarkably turning failure into success. If ever there was a case in which the facts surrounding the invention demonstrated that the prior patents brought forth by infringers as anticipations were not such in fact, this is that case.

Miscellaneous Prior Patents.

Defendants suggestively, but without insistence, presented the patents to Olds, No. 635,506, Dickinson, No. 754,286, and Cooper, No. 773,062. None of these patents relates to magneto ignition. Each of them discloses a construction in which the electric current for producing

the igniting spark in an engine cylinder is furnished by batteries, and consequently they have nothing to do with the type of apparatus involved in this suit (R. Vol. 1, 763). These battery ignition patents represent the very problem every one was trying to solve.

Defendants also present by way of suggestion the Milton patent No. 1,053,107, and the Hennig patent No. 916,312. The Milton patent illustrates the old Webster magneto, which was finally condemned in Mr. Waterman's letter of March 15, 1909. These patents illustrate the problems which were baffling the engineers of the Webster Electric Company and the International Harvester Company in 1908 and 1909, and it was the failure which such constructions threatened that Kane averted and turned into success by his invention of the unitary magneto ignition equipment (R. Vol. 1, 763).

Wattles Patent.

Defendants also present the Wattles patent No. 909,264. When testimony concerning that patent was being offered Judge Sanborn said (R. Vol. 1, 762):

> "I don't care to spend much time on this patent. It has an entirely different mode of operation."

In the Wattles patent the rotor of the magneto is oscillated by a piston in a small cylinder connected with the engine cylinder by passages extending through the spark plug. When the spark plug is removed from the engine for cleaning or for inspection of the operating mechanism, it is entirely impossible to operate the device in any such way as it is intended to be operated. It is obviously in no sense a unitary magneto ignition equipment, such as that invented by Mr. Kane (R. Vol. 1, 761).

Furthermore, at the very time that the International

Harvester Company was so out of patience with the old Webster magneto, it was also experimenting with the Wattles magneto of this patent, in conjunction with Mr. Wattles himself. On February 16, 1909, Mr. Waterman reported that "If this Wattles magneto is to be considered suitable for use on our engines, it must be completely redesigned" (R. Vol. 1, 334). Mr. Waterman testified at the trial that the Wattles magneto operated on an entirely different principle from the Webster magneto, and despite the fact that Mr. Wattles himself experimented with his magneto for several months at the shops of the International Harvester Company, the magneto never emerged from the experimental state, and was never adopted by the Harvester Company (R. Vol. 1, 238, 293.)

Weber Patent Admittedly Unanticipatory of Kane Claims 7 and 8.

Defendants also urged that the Weber patent* No. 820,535 offered a solution of those baffling problems which were so admirably solved by the Kane unitary magneto ignition equipment.

The Weber construction is in no sense a unitary magneto ignition equipment, and defendant's expert, Mr. Carter, admitted that it was not (R. Vol. 1, 695). Plaintiff presented in its Exhibit No. 76 a model made in strict accordance with the disclosure of the Weber patent (R. Vol. 1, 748). Defendant presented in its Exhibit No. 52 a modified illustration of the Weber construction (R. Vol. 1, 729). These two models are alike in exhibiting one vital defect. Looking at Figures 1 and 7 of the Weber

* The Court of Appeals, in its first opinion, held Kane's claims 7 and 8 anticipated by Weber but recanted in its second opinion. See plaintiff's petition and brief on rehearing (R. Vol. 1, 851).

patent (R. Vol. 2, 768), the armature shaft 15 is cocked by the push-rod 35 through the medium of the slide 33 and the rod 39. This compresses the main spring 50 and when the push-rod is tripped from the slide, the recoil of the main spring 50 oscillates the armature and separates the electrodes. It will be noted that the slide 33, with its rod 39, and the main spring 50, are supported on a shelf 31-49, secured to the engine cylinder, while the magneto and the spark plug are secured to the engine cylinder entirely separately. Both Plaintiff's Exhibit 76 and Defendant's Exhibit 52 exhibit this construction.

It is at once obvious that if the magneto and spark plug are removed from the engine for inspection or adjustment, the main spring—the operative element of the whole device—is lacking (R. Vol. 1, 695, 750). There is an entire absence of the unitary magneto ignition equipment of the Kane patent which can be removed from the engine as a unit, and operated in its normal and intended way in the open, so that the spark produced can be observed, and so that the device can be properly adjusted and replaced on the engine with assurance that it will operate precisely as it did in the open.

Defendants' expert attempted to argue that the device of the Weber patent, despite the absence of the main actuating spring, could be tested by hand operation, but he, of course, had to admit that in normal actuation by the spring the armature moved very much more rapidly than when moved by hand, and he was unable to tell whether, when the armature was operated by hand, the peak of the current wave occurred at the same position as it would occur when operated in normal manner by the spring (R. Vol. 1, 728).

Plaintiff's expert, on the other hand, demonstrated that hand operation of the Weber device removed from

the engine could give no indication of what its operation would be when replaced on the engine and operated by the main spring (R. Vol. 1, 750). He pointed out that twisting the armature by hand does not at all reproduce either the velocity or the uniformity of speed normally secured by the main spring, and that consequently the character of the spark is entirely different, because there is a difference in the phase relation between the current and the movement of the armature, and a difference in the voltage. For instance, there may be carbon dust about the electrodes tending to short-circuit them. If the device is operated with low voltage (as the Weber device necessarily would be when removed from the engine and operated by hand) there may be a spark, for the reason that with the low voltage the current is not sufficient to jump across the collected carbon. When, however, the device is replaced on the engine and operated at much higher voltage by the main spring, the voltage may be such as to bridge or jump across the collected carbon and prevent the formation of any effective spark at the contacts. In other words, when removed from the engine and operated by hand, the device may produce an observable spark, but when replaced on the engine and operated at normal speed and voltage, no effective spark will be produced, and the short-circuit will entirely prevent ignition (R. Vol. 1, 751, 752).

Plaintiff's expert also explained at length (R. Vol. 1, 753-761) that the difference in phase relationship between hand and engine operation entirely prevents comparing the sparks thus produced, and consequently hand operation does not enable an observer to ascertain whether an effective spark will be produced by engine operation. The importance of this matter and of the futility of attempting to judge the spark produced by engine operation by observation of the spark produced by hand op-

eration was not given by plaintiff's expert as a mere matter of opinion, but was scientifically demonstrated by accurate measurement with an oscillograph, the resulting oscillogram and diagrams being introduced in evidence as Plaintiff's Exhibits Nos. 77 and 78. (R. Vol. 2, 141, 143).

The claims of the Kane patent specify the mounting of the main actuating springs, as well as the other operative elements, as a unit with the magneto and the spark plug, so that the whole device constitutes a unitary magneto ignition equipment removable from the engine as a unit and operable when removed, under precisely the same conditions as when in place on the engine. It is obvious that the Weber device is not a unit and cannot be normally operated when removed from the engine, because, as defendant's expert admits, it must be removed in at least two pieces, one consisting of the magneto and spark plug, and the other of the main actuating elements (R. Vol. 1, 695).

Additional Reasons Why the Weber Patent Does Not Anticipate the Kane Claims.

But this is not all, for the fact is that the Weber device is not removable from the engine even as two pieces, but must be removed as three.

Looking at Figures 1 and 3 of the Weber patent (R. Vol. 2, 768, which are accurately reproduced in Plaintiff's Exhibit 76), the court will see that the spark plug is carried in a block 3 fitting against the engine cylinder, and that the magneto is carried on a plate 13, secured to a bracket 53, having a flange 54 secured against the block 3. Looking at Figure 3, there is a single bolt at the top of block 3, and two bolts extending through the flange 54 and the block 3 at the bottom. It is obvious that all

three of these bolts extend through the wall of the engine cylinder to secure the several parts in position. In removing the device from the engine, removal of the two bolts at the bottom would separate the bracket 53, carrying the magneto and its armature, and subsequent withdrawal of the bolt at the top would permit the separate removal of the block 3 carrying the spark plug. Obviously when this Weber device is removed from the engine, we would necessarily have not two pieces (which in itself would entirely prevent realization of the advantages of the Kane invention), but three pieces, consisting of the magneto and its armature as one piece, the spark plug, with its operating arm, as another piece, and the main actuating spring as a third piece (R. Vol. 1, 748).

Defendants' expert attempted to overcome this vital defect by saying that the shelf carrying the magneto could be rigidly united with the block carrying the spark plug, so that the two united pieces might be secured to the engine cylinder by the single bolt at the top of Figure 3. He admitted, however, that if this were done, the plug would have to be tapered (as it is in Defendant's Exhibit 52), in order to make anything like a rigid and gas tight connection, and that such a tapered plug was not in use prior to 1909. He further failed to state what use Weber could intend for the two lower bolts in Figure 3, unless they extended through the block 3 to the inner side of the engine cylinder (R. Vol. 1, 729-731).

Plaintiff's expert pointed out that the Weber patent discloses no such tapered plug as defendants' expert used in Defendants' Exhibit 52, and that Figures 2 and 3 of the Weber patent show the two attaching bolts at the bottom and the third attaching bolt at the top to be uniform, and holes to be smooth bored. If a tapered plug

(such as was not known in the art at the time of Kane's invention) were not used to attach the igniter block to the engine, it would be necessary to secure packing material between the block and the cylinder wall. The pressure in the cylinder, however, at the time of the explosion, ranges up to two or three hundred pounds, and if the igniter block were only secured by one bolt, this pressure would not only be decidedly liable to break the igniter block, but certainly a suitable degree of compression could not be secured in the engine cylinder if the block and packing were insecurely clamped, as they necessarily would be if only one bolt were used (R. Vol. 1, 749).

Since, therefore, the Weber patent illustrates a device that admittedly has to be removed from the engine, with the separation of at least two of the main elements, and that obviously can only be removed by the separation of all three of the main elements, there can be no doubt that the Weber patent does not anticipate Kane's invention of a unitary magneto ignition equipment.

Defendants further argue that if the type of magneto shown in the Milton and Hennig patents were substituted for the magneto proper of the Weber patent, the device so modified would have a self-contained spring. There is nothing in the Weber patent to suggest how such a substitution could be made. But, furthermore, both the Milton and Hennig patents show just the contrary arrangement, in which the spark plug and the magneto are mounted entirely separately of each other (R. Vol. 1, 762).

Defendants in the court below casually asserted in their brief that the International Harvester Company has stopped purchasing Webster magnetos and insinuates that this is due to the Weber device. Neither that assertion nor insinuation is true.

Defendants cited Mr. Cox as authority for its assertion, but Mr. Cox admitted that this was merely his understanding and that he was not in a position to know definitely about the matter (R. Vol. 1, 715-716). It was subsequently proved, however, that the International Harvester Company was buying thousands of Webster magnetos in each year right up to the time of trial (R. Vol. 1, 792).

As to the so-called Weber device, which defendants insinuate came into use, Mr. Cox said that the Accurate Engineering Company (with which he was formerly connected) commenced in 1915 to manufacture a magneto ignition equipment and purchased the Weber patent. These equipments were only experimental and unsuccessful, however, and even those did not follow the Weber patent, but were modified in view of plaintiff's device, with which Mr. Cox and the Accurate Company were then familiar. The Accurate Company, after discarding this experimental device, commenced to manufacture a device in which the entire equipment was mounted on and carried as a part of the igniter plug (R. Vol. 1, 715-720).

INFRINGEMENT.

Defendants Condemned Oscillating Magnetos Until Success of Kane Invention Was Demonstrated, and Then Merely Copied Plaintiff's Equipment.

The Sumter Electrical Company at Charleston, South Carolina, commenced to manufacture magnetos about 1907, and in 1910 and 1911 it was manufacturing and advertising (Plaintiff's Exhibit 24*) an oscillating magneto not unlike the old magneto discarded by the Web-

* See page 37, *infra*.

ster Electric Company at the advent of the Kane invention. That Sumter magneto was unsuccessful, and so during 1912, 1913 and 1914 the Sumter Company changed its policy and distributed advertising booklets condemning the oscillating type of magneto such as the Webster Company was then manufacturing, embodying the Kane invention. For instance, the Sumter pamphlet, Plaintiff's Exhibit 26,* issued in 1913, states, referring to oscillating magnetos (R. Vol. 1, 406):

> "We furnish a full line of this type formerly so popular, but wish to state that owing to the high efficiency of our standard rotary types, and the fact that we can meet every requirement with the rotary machine, oscillators are no longer so desirable, as they have certain inherent disadvantages not possessed by rotary machines.
>
> "We will be pleased to correspond with manufacturers now using oscillators, who desire to change to the more simple and efficient rotary type."

This advertising and condemnation of the oscillating magnetos continued into 1914, as is evidenced by Plaintiff's Exhibit No. 28,† a Sumter booklet issued in February, 1914. (R. Vol. 1, 407.)

During 1914 and 1915, however, the years of effort of the Webster Electric Company began to be rewarded. The Webster Electric Company's sales of the Kane equipment jumped from 11,458 in 1914 to 46,444 in 1915, and continued to grow rapidly in succeeding years (R. Vol. 1, 474). The Sumter Company viewed this success with envious eyes, and it therefore threw aside its condemnation of the oscillating magneto and in 1915 started to manufacture an equipment substantially in duplication of that manufactured by the Webster Electric Company since 1909. Defendant devised nothing new, but entered the field as an acknowledged infringer. It

*See page 39, *infra*.

†See page 40, *infra*.

changed its entire policy, and in its exploitation and advertising vigorously pushed the oscillating magneto equipment which it had substantially copied from the plaintiff's equipment. (R. Vol. 1, 418, 410, Plaintiff's Exhibit* 41.)

The Splitdorf Electrical Company was controlled by the same stockholding interests who controlled the Sumter Electrical Company, and was engaged in a generally similar business. As the infringing sales of the Sumter Electrical Company increased, the Splitdorf Electrical Company, apparently desiring to reap this harvest, took over the entire business of the Sumter Company in 1915 (R. Vol. 1, 486, 487, 491, 492).

The decree of the trial court finds that the defendant's machines, types A, B and C, which respectively are Plaintiff's Exhibits 44, 79 and 45, each infringe claims 7 and 8 of the Kane patent, and certain claims of the Podlesak reissue patent No. 13,878, and that additionally the Type A and Type B machines† infringe certain claims of the Podlesak patent No. 1,101,956 (R. Vol. 1, 808). Defendants do not attempt to dispute, either by testimony or argument, that the defendants' machines clearly embody claims 7 and 8 of the Kane patent and the claims of the two Podlesak patents, as specified in the decree.

Defendants did not mince matters when the final success of the Kane equipment manufactured by the Webster Electric Company since 1909 led them in 1915 to cast aside their condemnation of such equipments and embark on the infringing business. They boldly and slavishly appropriated the successful features of the Webster Electric Company's unitary magneto ignition equipment and just as boldly commenced a campaign to pirate the Webster Electric Company's market.

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* See page 43, *infra*.

† The trial court also found claim 3 of Kane infringed, but this is a relatively unimportant claim and, solely to simplify the issues, is not discussed in this brief.

KANE, NOT MILTON, IS THE INVENTOR.

Judge Sanborn Found That "The Evidence As a Whole Is Overwhelming That Milton Was Not the Inventor, and That Kane Was." The Court of Appeals Did Not Disturb This Finding of Fact.

The trial of this case in open court lasted over two weeks, and the testimony of most of the witnesses related to the question of inventorship of the unitary ignition equipment by Kane or Milton. Mr. Milton was on the stand much longer than any other witness. Judge Sanborn wrote his opinion the day after the trial ended, while the testimony and the demeanor of the witnesses were fresh in his mind, and he held (R. Vol. 1, 803):

> "The evidence shows the following: Both Milton and Kane were plaintiff's employees. Milton was Kane's superior, being employed as an engineer and inventor, whose inventions were to belong to plaintiff. During the year 1909, up to August 20, he was working on a high tension magneto for variable speed, multi-cylinder gas engines, which gave great promise, and was the means of securing a large contract for plaintiff with the Cadillac Company, but which was a failure. He was also paying some attention to the low tension magneto for hit and miss engines.
>
> "In April, 1909, the magneto produced by plaintiff called the Milton Magneto,* proved unsatisfactory,

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*Defendants' brief in the Court of Appeals, in referring to the defense that Milton instead of Kane made the invention in issue, sought to mislead the court by repeatedly stating that for many years the Webster Company advertised this revolutionizing invention as the "Milton Magneto." No one now contends that the invention in issue was made until April, 1909, but prior to that time plaintiff's product was advertised and known as the Milton magneto, because the generator itself embodied certain earlier Milton inventions. (See the letter and pamphlet at pages 1 and 11, Vol. 2, of the Record, and also the 1907 contract regarding the "Milton Improvements" at page 113, R. Vol. 2) The name "Milton Magneto" had nothing whatever to do with the origin of the invention in issue.

and there was danger of plaintiff losing the business of supplying it to its chief user, the International Harvester Company. Mr. Webster, the president of the plaintiff, urged Kane, and another employee by the name of Chiville, to try to produce a device which would solve the difficulty. Kane worked the matter out on April 11, 1909, made an incomplete drawing and brought it to plaintiff's office. He followed this by a complete drawing made April 14, 1909, showing the new device in full detail. He exhibited the first drawings to his father, then employed by the Harvester Company, and to persons in the office, and the later drawing to Mr. Chiville and others, and a device made according to the later drawing was produced shortly after, put on an engine and worked satisfactorily. None of these facts is in dispute, but Milton testifies that the idea was his and not Kane's, and that the latter made the last drawing under his direction. Kane produced both of the drawings, they bear his name and the dates, and he is corroborated by his father, who produced his diary showing the date appearing on the first drawing, both of which are in evidence. Milton's testimony that the drawings were made under his direction is not corroborated, except by slight circumstances unsatisfactory in their character, and is inconsistent with his testimony and conduct in the Kane-Milton interference proceedings in the Patent Office. In those proceedings he put the date of his disclosure in August, 1908. On this trial he adopted Kane's date. He took very little interest in the interference proceedings, but refused to concede priority to Kane. His American patent was owned by plaintiff, so he had no interest in showing priority, except the pride of an inventor. He produced no drawings showing his alleged discovery other than those in the English patent made in October, 1909; no original drawings whatsoever, no corroboration of his claim to invention. While the correspondence in 1909 between him and Mr. Webster shows that he took considerable interest in the improved low tension magneto, as well as the high tension device, and he attempted to develop it in England, yet the evidence as a whole is overwhelming that he was not the inventor, and that Kane was. The evidence is thoroughly satisfactory."

Review of Testimony Establishing Kane's Inventorship.

The record abundantly supports Judge Sanborn's findings. In the spring of 1909 the Webster Company was located in Chicago, and in a small way was manufacturing an oscillating magneto. Its only customer was the International Harvester Company, and Plaintiff's Exhibit No. 11 is a specimen of the magnetos which were then being made. This type of equipment is illustrated generally in the Milton patent No. 1,053,107, and it consisted of a magneto proper mounted on a boss, projecting from the engine cylinder at a point considerably removed from the spark plug. The rotor or armature shaft of the magneto was connected with the shaft of the movable electrode in the spark plug by interposed link mechanism. Every witness who had any connection at that time with either the Harvester Company or the Webster Company (including Milton) testified fully about the many serious troubles that were experienced with the magnetos like Exhibit 11 (R. Vol. 1, 230, 243, 343, 513).

The superintendent of the Milwaukee works of the International Harvester Company at that time was Mr. H. A. Waterman. He made a report on March 15, 1909 (R. Vol. 2, 1), to the experimental department of the Harvester Company at Chicago, stating in detail the many prohibitive defects of the old Milton magneto, and concluding that "unless these unsatisfactory conditions are corrected, we have good reason to consider it necessary to arrange for some substitute for this magneto, for use on our engines—entirely on the ground of defects developed." The substance of this complete condemnation of the Milton magneto was communicated to the Webster Company and its president, Mr. T. K. Webster, and its effect was obvious. It meant the complete collapse

of the small and struggling Webster business unless a radical remedy could be found (R. Vol. 1, 343).

Mr. T. K. Webster, the president of the Webster Company, sought to find the remedy. He called in Mr. E. J. Kane and Mr. Gerald Chiville, who were both engineers in the employ of the Webster Company, and explained to them the serious condition of affairs, and told them to get up independently the best designs they could for a new magneto equipment. About two days later both Mr. Chiville and Mr. Kane presented their new designs, which were submitted to the other engineers of the Webster Company. Mr. Kane's design was accepted (R. Vol. 1, 243, 346, 598, 675).

Mr. Kane testified that on one of his previous trips to the Milwaukee works of the Harvester Company he had seen a copy of Mr. Waterman's report of March 15th, and at once began to speculate on some way of overcoming the defects of the magneto. Some time later Mr. Webster asked him if he could not do something to remedy the situation, and on the following day (Sunday) Mr. Kane worked out at home a rough drawing of a design, which he thought would remedy the troubles confronting the company. This drawing is in evidence as Plaintiff's Exhibit 17, and it is dated April 11, 1909, and signed E. J. Kane (R. Vol. 1, 244, 245; Vol. 2, 27).

Mr. Maurice Kane, the father of E. J. Kane, testified to his son's having made this drawing at home, as described by the son, and it was he who suggested that the son sign and date the drawing. Mr. Maurice Kane also produced his own memorandum book, in which he had written, on April 14th, 1909: "Cavanaugh: Joe has worked out a much simpler attachment of magneto to engine." Mr. Maurice Kane was the head of the experimental department of the Harvester Company, and Mr.

Cavanaugh was his assistant, this entry being made to remind Mr. Kane to call the matter to the attention of Mr. Cavanaugh (R. Vol. 1, 295-297).

Immediately following Sunday, April 11, 1909, E. J. Kane, at his desk at the Webster Company, completed a second drawing showing fully all the details of the new design which he had made, and this drawing is in evidence as Plaintiff's Exhibit 18, and is signed "E. J. Kane, April 14, 1909." (R. Vol. 1, 245, 319; Vol. 2, 29.)

After Mr. Kane's new design, as represented in the drawing of April 14, 1909, had been accepted by Mr. T. K. Webster and the engineers of the Webster Company, the drawing and some rough sketches made from it were turned over to Mr. Abbott Munn, the foreman of the magneto department of the Webster Company, who proceeded at once to make up a sample equipment. Such an equipment is in evidence as Plaintiff's Exhibit No. 12 (R. Vol. 1, 246, 247, 319).

Mr. Munn testified that he saw Mr. Kane making the drawing Exhibit 18, and talked with him about it at the time. When the drawing was completed the drawing was turned over to Mr. Munn, who got the patterns made from the drawings, and got castings from the foundry, and machined up the castings and completed the magneto equipment in accordance with the Kane drawing (R. Vol. 1, 319-322).

When Mr. Cavanaugh was shown the Kane design, he was enthusiastic, and in order to facilitate its completion and test he furnished a six-horse-power engine to the Webster Company (R. Vol. 1, 244, 344, 345). As soon as Mr. Munn had completed the first specimen, like Exhibit 12, embodying the Kane design, it was tried out at the Webster factory on this Harvester Company engine which Mr. Cavanaugh had supplied. The device was a success

from the start (R. Vol. 1, 247, 319). On April 29th Mr. T. K. Webster wrote to the International Harvester Company, enclosing photographs of the Kane equipment attached to this Harvester engine, pointing out that the new equipment satisfactorily overcame all of the previous objections of Mr. Waterman (R. Vol. 1, 343, 344; Vol. 2, 25).

Mr. Maurice Kane testified from an entry in his diary that he saw this new equipment tried out at the Webster plant on May 13, 1909, and that it worked well, there being present with him Mr. Cavanaugh, Mr. Webster, Mr. Joe Kane and others (R. Vol. 1, 298, 301).

Soon after this Mr. E. J. Kane took the original specimen of the new magneto equipment, such as Plaintiff's Exhibit No. 12, to Milwaukee, and exhibited it to Mr. Waterman (R. Vol. 1, 230, 248, 299).

The new magneto overcame all of the difficulties of those like Plaintiff's Exhibit No. 11, which had been so thoroughly condemned by Mr. Waterman, and after exhaustive tests Mr. Waterman reported on June 11, 1909 (R. Vol. 2, 3), to the experimental department of the Harvester Company, that the new magneto had for some time been in operation; that it was different in all of its parts from the older magnetos; and that the alterations overcame the objections raised in his report of March 15th. As Mr. Waterman said:

> "The magneto as now presented seems to work well, and except for the fact apparatus of this nature is rather delicate when continuously exposed to dust and moisture, we see no reason why it should not prove reasonably satisfactory, electrically and mechanically."

The new magneto proved so thoroughly satisfactory that the Webster Company kept the business of the Harvester Company (R. Vol. 1, 349), and by August or September,

1909, the Webster Company was manufacturing these magnetos in quantities (R. Vol. 1, 327). From that time on, the sales of the successful Kane unitary magneto ignition equipment rapidly increased, until by 1912 the Webster Company was selling 8956 equipments, and in 1918 the sales reached the amazing total of 129,785 equipments (R. Vol. 1, 474).

Mr. Kane testifies that Mr. Webster, whose time and attention was always divided between many activities (R. Vol. 1, 391), did not seem concerned about filing a patent application on the Kane magneto ignition equipment. As Mr. Webster said, he was after results, and when the new machine was approved by the Harvester Company the thing was banished from his mind (R. Vol. 1, 369). Finally Mr. Kane himself, at the instance of his father, filed an application on February 2, 1910, paying all the expenses himself (R. Vol. 1, 256). This application was filed and prosecuted by Mr. Kane's personal attorneys, and on January 14, 1915, pursuant to a requirement of the Patent Office, a divisional application was filed by Mr. Kane, which eventuated in the patent in suit. Neither Mr. Webster nor the Webster Electric Company were informed of the filing and pendency of the Kane applications (R. Vol. 1, 256).

Defendants' Contention Rests Solely on Milton's Assertion, Which Judge Sanborn Found Uncorroborated.

During the spring of 1909, when the Kane magneto equipment was invented, Mr. Milton was one of the engineers of the Webster Electric Company, and while he was taking some interest in the low-tension magneto with which this litigation deals, he was devoting most of his time and thought to a high-tension magneto which the company was then attempting to develop (R. Vol. 1, 252,

330). Defendants seek to save themselves in their piratical infringement by saying that the Webster Company has secured a patent for this invention, upon which its success it founded, in the name of Kane, when it should have obtained a patent in the name of its other employee, Milton.

Mr. Milton testified before Judge Sanborn at great length, but he was forced by the very nature of things to corroborate every fact upon which invention by Kane depends.

Mr. Milton testified that Mr. Kane made the two drawings Plaintiff's Exhibits 17 and 18 (R. Vol. 1, 532-535), and that immediately following these a sample equipment was made up in the shop, and that this was taken to Milwaukee for inspection by Mr. Waterman by E. J. Kane (R. Vol. 1, 627). Mr. Milton further agreed with the other witnesses that the new magneto equipment operated with entire satisfaction, and that following Mr. Waterman's approving report of June 11, 1909, the commercial production of the new magnetos was commenced.

The court will search Mr. Milton's testimony in vain for any testimony contrary to the fact that this new magneto was invented by Mr. Kane, except for the bald assertion by Mr. Milton that the Kane drawings of April 11 and April 14, 1909, were worked up by Kane following Milton's suggestions. There is not a single document nor a single witness in the record to corroborate Milton's mere assertion or to oppose the overwhelming evidence for Kane offered by every witness who had any connection with the subject and the irrefutable documents which they presented. Judge Sanborn held that Milton's testimony was inconsistent and that he produced "no corroboration of his claim to invention." (R. Vol. 1, 804.)

Prior to the Declaration of the Kane-Milton Interference No One Connected With Plaintiff, Except Milton Himself, Knew That He Was Not the Inventor of the Subject-Matter Claimed in the Milton Patent.

On October 28, 1909, Milton was in Europe and on that day he filed in his own name a British patent application illustrating the new magneto equipment which the Webster Company by that time was manufacturing in commercial quantities. The claims of that British application had nothing whatever to do with the broad features of invention embodied in the new magneto, but were limited to certain mechanical details included in it. The Milton British claims were as follows:

> "1. In a magneto generator, an element operating the inductor, which acts also as or carries a cam surface, whereby the ignition points are allowed suddenly to be broken, but slowly to contact, whereby undue hammering of the contacts is obviated, and which also acts or carries supports for the springs operating the inductor; substantially as described.
>
> "2. In a magneto generator, having the feature claimed in claim 1, an arrangement whereby unnecessary hammering of the contacts is avoided, which consists in automatically throwing the inductor operator out of action when its movements are of greater frequency than correspond to the desired ignition period, except during such time as the spark is required to pass for ignition purposes.
>
> "3. All improvements in and relating to magneto generators with reference to the accompanying drawings."

The Kane application, which Kane personally filed on February 2, 1910, however, contained broad and sweeping claims comparable to those here in issue. Original claim 8 of the Kane application, for instance, read (R. Vol. 2, 516):

> "In igniters in explosive engines, the combination

with an electric circuit, having included therein two electrodes, of means for normally holding the electrodes in contact with each other, a magnetic field, an oscillating armature located in said field, and included in said circuit, a reciprocating member controlled by the running of the engine for moving the oscillating armature in one direction, means for moving the oscillating armature in the opposite direction, means for separating the electrodes when the oscillatory armature is moved in said opposite direction, and means for timing the movement of said armature in said opposite direction."

After Mr. Milton returned from Europe the question became imminent as to whether or not a United States application should be filed by him in correspondence with the British application. Such an Amercian application had to be filed, if at all, before October 28, 1910. The Webster Electric Company, by virtue of a contract with Milton, was licensed under any Milton patents. It had no rights at that time under the Kane application, and had no knowledge whatever that the Kane application existed (R. Vol. 1, 352, 364, 371).

Mr. Milton frequently wrote to Mr. Williams, the patent counsel of the Webster Electric Company, asking if the United States application was to be filed. Mr. Williams at that time had never heard of Kane, and knew nothing of the facts which we have reviewed above. Mr. Webster, on the other hand, while he knew those facts, had no knowledge (as he has testified at length) of any relation between the Milton British application and the invention made by Mr. Kane. There was not a person connected in any way with the Webster Electric Company who knew the facts concerning Kane's invention of the unitary magneto ignition equipment, and at the same time knew that the Milton British patent (with which the proposed United States application was to correspond) disclosed and was based on that same equipment which

Mr. Kane had invented. (R. Vol. 1, 370, 374; Vol. 2, 347-353.)

Mr. Webster finally left to Mr. Williams the decision as to whether or not the United States Milton application should be filed, and it was filed on October 28, 1910.

In the natural course, Mr. Williams' office, entirely unaware of either Kane or the Kane application, prosecuted the Milton United States application to obtain claims which they considered necessary to protect the commercial equipment of the Webster Electric Company, which Milton allowed them to believe he had invented. As a result the Milton patent No. 1,096,048 was issued on May 12, 1914.

Some time after the issuance of the Milton patent it came to the attention of Mr. Kane, who was no longer connected with the Webster Electric Company. He consulted with his attorneys, and informed them that he, not Milton, was the inventor of the most important features disclosed in the Milton patent (R. Vol. 1, 282). Accordingly, the pertinent claims of the Milton patent were copied into the Kane patent, and pursuant to a requirement of the Patent Office, were later removed from the Kane application and presented in a divisional application filed January 14, 1915, which eventuated in the patent in suit. (R. Vol. 2, 551, 624.)

The Patent Office, of course, declared an interference in August, 1915, between the Milton patent and the Kane application, counsel for the Webster Electric Company representing Milton, and Mr. Kane's personal counsel representing him. (R. Vol. 2, 362.)

Kane's Statement in the Kane-Milton Interference Is Fully Corroborated by the Record in This Case. Milton Has Entirely Abandoned the Assertions Then Made in His Statement.

In his preliminary statement Kane swore that after conceiving the invention, he made a sketch of it on April 11, 1909, and a working drawing on April 14, 1909; that he explained the invention to others about April 11, 1909; that a device embodying the invention was completed and successfully operated about May 1, 1909, and that further devices were manufactured in July and August, 1909. (R. Vol. 2, 371.)

These are precisely the same facts which Kane has stated here, and in which he is corroborated by every witness and by every material document in the case. That preliminary statement was prepared and filed by Kane's personal attorney, without the knowledge of anyone connected with the Webster Electric Company, and before the Webster Electric Company had any interest whatever in the Kane application. The drawings of April 11, and April 14, 1909, which are signed and dated by E. J. Kane, and which are now Plaintiff's Exhibits 17 and 18 (R. Vol. 2, 27, 29) in this case, were produced by Kane from his private papers in support of his preliminary statement in the Milton interference.

Milton's preliminary statement in that interference stated that he conceived the invention about August 15, 1908; that he made a drawing of it on August 15, 1908; that he explained the invention to others on August 15, 1908; and that he reduced the invention to practice on September 24, 1908 (R. Vol. 2, 379). In his testimony in the Kane interference Milton again swore to these same 1908 dates (R. Vol. 2, 468).

In the present case Milton has entirely abandoned this

fiction of invention by him in 1908. He now corroborates all of the statements made by Kane and the other witnesses as to the invention having been developed in the spring of 1909, and having found its first concrete embodiment in the drawing made by Kane on April 11, 1909 (R. Vol. 1, 534, 535). Milton and defendants now rely solely on Milton's self-serving and entirely uncorroborated assertion that while the invention was made in 1909 and first found form in Kane's drawing of April 11, 1909, nevertheless, the invention was not made by Kane, but was suggested to Kane by Milton. This entire change of position by Milton took place only after the facts had been elaborately developed during plaintiff's *prima facie* proofs and after he had discussed these proofs thoroughly with defendants' counsel prior to his taking the witness stand during the defense proofs.

Plaintiff Made Every Possible Effort to Establish Milton's Inventorship, and Purchased the Kane Application Only After the Fact of Kane's Inventorship Was Overwhelmingly Established.

The court is urgently requested to read that part of Milton's testimony extending from page 590 to page 613 of the record. From this testimony your Honors will learn that in preparation for the Kane-Milton interference (and before the Webster Company had any interest in the Kane application) counsel for Milton and the Webster Company repeatedly implored Milton to go through all of his papers and files and unearth anything and everything that might help to prove that Milton invented this structure. Milton also describes vividly two visits counsel made to him at Detroit, when counsel and Milton together made searches of the most exhaustive character for evidence in support of Milton's inventorship.

It will be learned, also, that, not content with this, Milton obtained from his former home at Louisville a trunk full of papers which were stored there, in the attempt to find something of probative value.

Mr. Milton admitted that, despite every effort, he was not able to find a single drawing or memorandum or other thing to corroborate his claim of invention. (R. Vol. 1, 597.)

In connection with the Kane-Milton interference Milton gave counsel for himself and the Webster Company the names of all of the men connected with the Webster Electric Company at the time this invention was made and said that these men would substantiate his claims (R. Vol. 1, 596). Every one of these men was interviewed, and every one of them said (as they have testified here) that Kane, not Milton, was the inventor of the unitary magneto ignition equipment.

After interviewing these men it became wholly apparent that the Webster Electric Company's equipment was not invented by its employee Milton, but by its employee Kane; and, forced by the discovery of these facts, the company purchased the Kane application for $12,000 in April, 1916. (R. Vol. 1, 217, 372.) It was then that counsel for Milton and the Webster Company first saw and obtained possession of the Kane drawings of April 11 and April 14, 1909.

Milton Now Admits the Falsity of His Statements in the Kane-Milton Interference, and Defendants Rely Wholly on His Present but Unsupported Assertions.

After finding that all of the men on whom Milton relied said that Kane, not Milton, made this invention, and after finding the conclusive drawings of April 11 and April 14, 1909, signed and dated by Kane, in his possession, there was no shred of doubt left that this inven-

tion could be validly patented only to Kane. Milton was therefore repeatedly requested by the Webster Company and its attorneys to execute a formal concession of priority to Kane so that the interference might be terminated in accordance with the facts. Despite a complete disclosure to him of all of the facts and drawings which counsel had found, Milton still clung to the fiction of his own inventorship and refused to concede priority (R. Vol. 1, 590-613; Vol. 2, 131). There was only one alternative left and that was to take testimony on behalf of both parties and allow the Patent Office to decide the matter. This was done and Milton still clung to his fiction, but the interference terminated with a judgment of priority in favor of Kane (R. Vol. 2, 482).

In the present case Milton testified exhaustively, and, as we have pointed out, he entirely abandoned his former contention that he himself invented this subject-matter in 1908, and admitted that the invention was made in the spring of 1909 (R. Vol. 1, 532, 651-656). He admitted that Kane made the drawings of April 11 and April 14, 1909 (R. Vol. 1, 534), and he admitted every other material fact regarding the development of the invention in issue. His only disagreement with the other witnesses in the case is his contention that Kane developed this invention and made these drawings under Milton's directions. Milton has not produced a single document in support of his contention, and he was forced to admit that the drawings and data which were undiscovered by him at the time of the interference and on which he bases his entire change of position from invention by him in August, 1908, to suggestion to Kane in April, 1909, do not disclose nor relate to the subject-matter in issue (R. Vol. 1, 592, 593, 654).

Judge Sanborn's Opinion of Milton's Testimony.

Defendants in their brief in the Court of Appeals admitted that "Mr. Milton did not make a good witness." He certainly did not for defendants' purposes. Judge Sanborn concluded (R. Vol. 1, 803) that:

> "Milton's testimony that the drawings were made under his direction is not corroborated, except by slight circumstances unsatisfactory in their character, and is inconsistent with his testimony and conduct in the Kane-Milton interference proceedings in the Patent Office. In those proceedings he put the date of his disclosure in August, 1908. On this trial he adopted Kane's date. He took very little interest in the interference proceedings, but refused to concede priority to Kane. His American patent was owned by plaintiff, so he had no interest in showing priority, except the pride of an inventor. He produced no drawings showing his alleged discovery other than those in the English patent made in October, 1909; no original drawings whatsoever, nor corroboration of his claim to invention."

Defendants' argument, therefore, is entirely untenable unless the court ignores the documentary proof and assumes that all of the witnesses, except Milton, are incredible, and that he alone is credible.

Milton Has Proved Himself Wholly Incredible.

Mr. Milton, however, has shown himself to be entirely unworthy of belief. As we have previously shown, he originally stated in his preliminary statement in the Kane-Milton interference that he conceived and made drawings of and reduced the invention in issue to practice in 1908 (R. Vol. 2, 379), and he repeated those assertions in his interference testimony (R. Vol. 2, 468). At this trial, however, after hearing all of the other witnesses and conferring with defendants' attorneys, he

pretends to remember that the invention was not made until 1909, and that although Kane made the drawings and did the development work, he did so under Milton's instructions (R. Vol. 1, 652, 653). What an easy way to turn all the testimony in the case in favor of Milton and the defendants! But there is not a single document nor another witness to support Milton's pretention!

Mr. Milton tried to give the impression that he was here to right some wrong that the Webster Electric Company had put upon his pride of inventorship, and that the time when he discovered the necessity of righting this wrong was at an interview with defendants' counsel in December, 1918—just prior to the trial of this case (R. Vol. 1, 574, 586). On cross-examination, however, he was obliged to admit that all of these facts and these drawings had been presented to him by counsel for the Webster Electric Company in 1916, and that he had been urged for months to prepare himself to testify in the Kane-Milton interference after he was familiar with the testimony then offered on behalf of Kane (R. Vol. 1, 590-613).

At another point Mr. Milton testified that he did not know until later that plaintiff had bought the Kane application, and he implied that he had been injured because he didn't know the interests of both parties in the Kane interference were owned by the Webster Electric Company (R. Vol. 1, 669, 672). But he had to admit the receipt of a letter from the Webster Electric Company's counsel in September, 1916, asking him to concede priority to Kane for the benefit of the Webster Company (R. Vol. 1, 611, 672).

Mr. Milton also insisted that plaintiff's counsel told him during the Kane interference that the Webster Company bought Kane's application because it was cheaper to buy it than to fight it (R. Vol. 1, 609), but right on

top of that he was forced to acknowledge receiving a letter in September, 1916, in which he was told that the Kane application was purchased because investigation demonstrated that the Kane patent would be sustained and the Milton patent would not (R. Vol. 1, 611).

Mr. Milton also insisted, because it fitted in better with the fiction he was trying to establish, that these new magneto equipments had been built in considerable quantities and delivered to the International Harvester Company in May, 1909 (R. Vol. 1, 622, 623). But the letters of the Harvester Company show, as the other witnesses have testified, that those deliveries did not begin until August or September, 1909 (R. Vol. 2, 4, 7, 8, 9; Vol. 1, 624-632), and that the tests of the preliminary machine had not been completed until June 11, 1909 (R. Vol. 2, 3).

We submit that the uncorroborated statements of a man of the character of Mr. Milton shows himself to be cannot override the testimony of many other witnesses corroborated in every detail by unimpeachable documents.

The Chiville Letter, Which Milton Attempted to Conceal, Conclusively Refutes Milton's Assertions, on Which Defendants Rely.

Judge Sanborn saw and listened to Mr. Milton for several days, and he also heard the extended testimony of J. A. Munn, A. C. Kleckner, Ernest Bruce, E. J. Kane, Maurice Kane and T. K. Webster. These are the men who, at the time of the Kane-Milton interference, Milton said would support his claim of inventorship. Everyone of them testified in the interference and has testified before Judge Sanborn that Kane, not Milton, invented the unitary magneto ignition equipment.

One other man, G. D. Chiville, was more closely asso-

ciated with this matter than any one except Kane himself. Mr. Chiville could not be located, so that he was not available as a witness for either party at the time of the trial, but his testimony dramatically appeared in the form of a personal letter to Milton.

Mr. Milton testified (R. Vol. 1, 603):

> "X-Q. Didn't he (counsel for the Webster Company) tell you, or didn't some of us tell you, if you don't remember who it was, that Chiville said it was Kane who brought down for the first time and showed for the first time this design?
>
> "A. I don't recall it that way at all.
>
> "X-Q. Did not you get the idea from any of us that Chiville, instead of corroborating you as you had said that he probably would, corroborated what we told you Kane would testify to; didn't you learn that at that time?
>
> "A. I learned at some time during this period that Chiville would make a statement that he thought that Kane designed that."

Subsequent to this testimony and just before Milton left the stand, counsel for plaintiff were given permission to look through the voluminous papers which Mr. Milton had with him at the trial, and in so doing they found, hidden away from the other papers, a letter from Chiville to Milton (Plaintiff's Exhibit 66, R. Vol. 2, 121), which is reprinted in Milton's testimony concerning it at page 675 of Volume 1 of the record. Mr. Milton admitted that he had this letter in his possession and had just received it when counsel for Milton and the Webster Company was interviewing him at Detroit on May 8, 1916, in the attempt to find something in support of Milton's claim, but that he did not say anything to his counsel about it (R. Vol. 1, 675, 676). That letter reads as follows:

"CHICAGO, ILLINOIS, May 5, 1916.

"*Dear John*:

"Mr. Robert M. See, of Williams, Bradbury &

See, has asked me to sign an affidavit concerning my recollection of the originating of the idea of mounting a low tension magneto of the ignition plug casting. Also of the tripping of movable electrode by inductor shaft yoke.

"All that I can recall now is Mr. T. K. Webster asked Kane and me to design the most compact and simple outfit we could. We worked out our ideas separately and Kane's design was accepted and used.

"If an affidavit of the above will work against your interests in any way, I will try to get out of signing one. I have said I would sign one, and then I thought it might affect your interests, so I wrote to find out.

"Mr. See says he is to see you in Detroit Monday. Please keep this letter to yourself.

"We are all well and hope your are too. Give our best regards to Mrs. Milton and the little girl. Answer this letter right away please.

"Yours very truly,

"GERALD D. CHIVILLE."

This is precisely the way in which the record indubitably proves that this invention came into being. Milton never told counsel during the interference of the existence of this letter, and never produced it at the trial of this case, until it was found and he was confronted with it by plaintiff's counsel. There is no doubt whatever that Milton suppressed it because he knew, as Chiville suggested to him, that the facts stated by Chiville "will work against your interests." This evidence which Milton attempted to suppress absolutely agrees with the testimony previously given by Mr. Webster and Mr. Kane and others, and completely negatives Milton's fiction on which defendants rely.

When the court recalls the painstaking and exhaustive attempt of the Webster Electric Company and its counsel to establish Milton's inventorship and the validity of his patent for which it had almost completed payment,

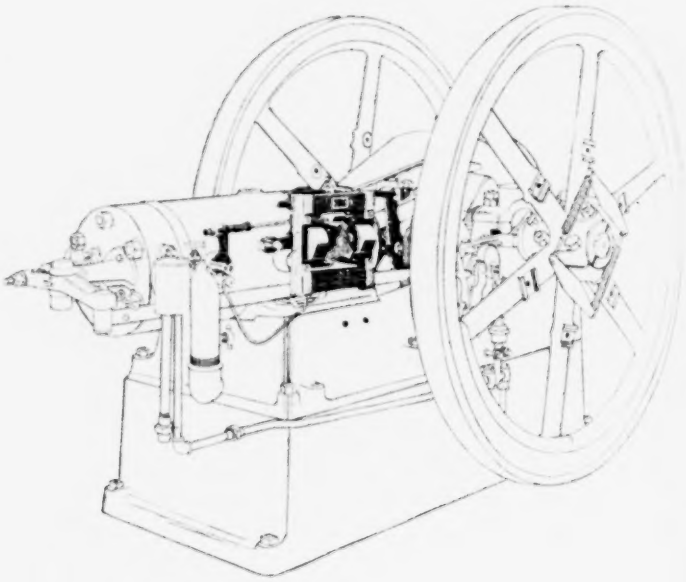
and recalls also that it was not until after this attempt had wholly failed that the Webster Electric Company purchased the Kane application, the court may well say with the Second Circuit Court of Appeals in *Proctor & Gamble Company* v. *Berlin Mills Company*, 256 Fed., 23:

> "It is a strain upon credulity to believe that when this plaintiff corporation might just as well have advanced an application in Kayser's name, it deliberately preferred the fraud of prosecuting it in that of Burchenal."

We think this court undoubtedly will conclude with Judge Sanborn that "the evidence as a whole is overwhelming that Milton was not the inventor and that Kane was," and that "the evidence is thoroughly satisfactory."

PLAINTIFF'S EXHIBIT 13.

Plaintiff's Exhibit 13 is a circular, published by the International Harvester Company of America, and describes and illustrates the *non-unitary* Milton device which was superseded by the Kane invention (R. Vol. 1, 241, 242).



PLAINTIFF'S EXHIBIT 24.

This (physical) exhibit is a booklet put out by the Sumter Electrical Company in 1911 (R. Vol. 1, p. 400). On page 47 of this exhibit is illustrated the *non-unitary* type of oscillating equipment which the Sumter Company made at that time. Page 47 of the exhibit is reproduced below.

IGNITION HANDBOOK. 47

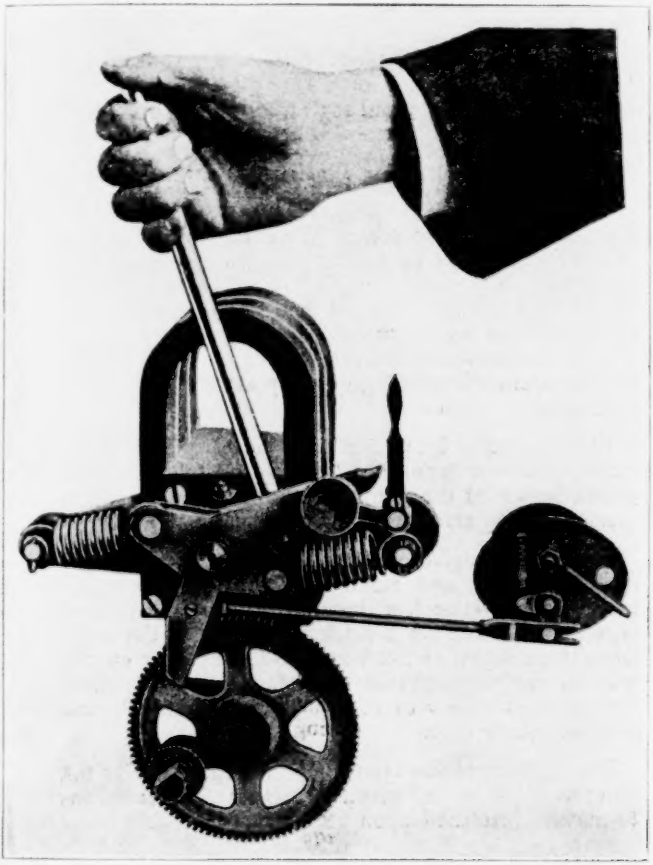


FIG. 18—SETTING 3 M OSCILLATOR BY HAND TO PRODUCE SPARK WITHOUT TURNING ENGINE.

PLAINTIFF'S EXHIBITS 25, 26, 28 and 32.

These (physical) exhibits are booklets and leaflets put out by the Sumter Electrical Company in 1913 and and 1914 (R. Vol. 1, pp. 400-401). They illustrate the systematic attack which the Sumter Company, during 1913 and 1914, made on the Webster Company's type of equipment—the equipment which the Sumter Company pirated in 1915.

Page 43—Exhibit 25.

MAGNETO HANDBOOK 43

on the igniter points; and such a machine we are prepared to furnish.

TRACTOR TYPES: We furnish magnetos specially adapted for tractors.

OSCILLATING MAGNETOS: We furnish a full line of this type, formerly so popular, but wish to state that owing to the high efficiency of our *Standard Rotary Types*, and the fact that we can meet every requirement with the rotary machine, the oscillators are no longer necessary, nor are they desirable, owing to certain inherent disadvantages not possessed by rotary machines.

Fig 18 shows front and side views of our single spring oscillator type "BV," a very popular machine, possessing all of the Sumter features, and including a special bearing arrangement, special lubricators, etc.

We can accomplish starting from a standstill with a rotary magneto, and fulfill any other conditions for which an oscillator has heretofore been considered necessary. While we furnish a machine of the oscillating type, equal if not superior to anything on the market, we suggest that manufacturers correspond with us with a view to adopting the more simple and efficient rotary type.

DIMENSIONS of the type "BV" are substantially the same as the type "B" given on page 45. Detailed information furnished upon request

Page 35—Exhibit 26.

not possessed by the standard types. The magneto used on an oil engine, where water is injected into the cylinder, must produce an igniting spark of such a quality that it will not be affected by water lodging on the igniter points; and such a machine we are prepared to furnish.

TRACTOR TYPES: We furnish magnetos specially adapted for tractors.

OSCILLATING MAGNETOS: We furnish a full line of this type, formerly so popular; but wish to state that owing to the high efficiency of our STANDARD ROTARY TYPES, and the fact that we can meet *every requirement* with a rotary machine, the oscillators are no longer so desirable, as they have certain inherent disadvantages not possessed by rotary machines.

We will be pleased to correspond with manufacturers now using oscillators who desire to change to the more simple and efficient rotary type.

We can accomplish starting from a standstill with a rotary magneto, and fulfill any other conditions for which an oscillator has heretofore been considered necessary. We do not recommend oscillators, and while we furnish a machine of this type, equal, if not superior, to anything on the market, we do not recommend same.

Page 6—Exhibit 28.

SPECIAL LOW-TENSION MAGNETOS

In addition to the types JR, B, and AP, we furnish a type AG machine, similar in dimensions to the type AP, but with extra large magnets, making it suitable for very large, slow-moving engines.

We also build special machines to meet certain requirements met in engines using heavy fuel oils.

OSCILLATING AND SELF-STARTING MAGNETOS

We formerly furnished a full line of oscillating Magnetos, but wish to state that, owing to the high efficiency of our standard rotary types, and the fact that we can meet every requirement with the rotary machine, oscillators are no longer necessary, nor desirable, owing to certain inherent disadvantages.

Among these disadvantages may be mentioned the use of spiral springs. As every mechanic knows, it is impossible to operate a spring of this type continuously without breakage. Other defects are high voltage, the difficulty in keeping the timing in proper adjustment, and in taking care of the advance and retard. The necessary drive is complicated and expensive.

As to the self-starting feature, some time ago we developed the self-starting Magneto, wherein the trip lever was locked back against the tension of the springs and then fired by releasing same. We patented this feature, and some of the machines now offered, for which claims of novelty are being made, we consider infringements of this patent. We did not offer a machine of this type to our customers, because we considered it inherently defective, and although we manufactured same, and it proved more satisfactory than any similar machine on the market, we could foresee where it would not give the same uninterrupted service as the standard rotary types for the life of the engine.

EASY STARTING

A few minutes' consideration will show that it is necessary to turn the engine over to get compression to start. Now we can demonstrate that a Sumter rotary Magneto will start practically any engine that can be so turned over—except possibly a few of the sizes between those that are hand- and air-started. Therefore the "self-starting" Magneto possesses no advantage, as it is necessary to turn the engine to get compression. Any engine that is turned over by hand at the rate of eighteen or twenty revolutions per minute, or that is air-started, can be started with a Sumter rotary Magneto. We do not mean that you must turn the engine over eighteen or twenty times; but if, when the igniter snaps, the engine is moving *at the rate of* eighteen or twenty revolutions per minute, a good igniting spark will be produced.

Some of our customers employ a starting feature wherein the engine is rocked back against compression, in which case a quarter of a turn of the flywheel is sufficient to start.

This high starting efficiency of Sumter rotary Magnetos should be considered when comparing them with other types. It is true there are many Magnetos that will run an engine after it is once started, but these machines lack efficiency at slow speeds. They must be speeded up to produce an igniting spark. These high-speed machines are subject to mechanical trouble, worn bearings, etc.

OUTPUT

We call attention to the fact that the current from an alternating Magneto cannot be satisfactorily measured with the ordinary measuring instruments. We will be glad to furnish those interested, specifications for making tests of the Sumter Magneto in comparison with any other, and will outline the conditions by which the customer can make accurate comparisons. The electrical output of Sumter machines is so proportioned that the spark has certain qualities that prevent the igniter points from being pitted or eaten away, and the igniters will run for days and even months without requiring any of the attention or adjustment which must be given them when batteries are used.

Many of our customers report a marked saving in fuel consumption when Sumter Magnetos are used. This is reasonable, as the hot, vigorous spark rapidly ignites the mixture, a point which should not be overlooked when comparing the Sumter machines with others.

Many customers report an increase in horsepower. On a twelve-horsepower engine tested at the University of Oklahoma, it was found that, with the Magneto the engine developed fourteen-horsepower on brake test, as against 11.2 with battery ignition.

Page 3—Exhibit 32.

Unlike the oscillating Magnetos, the Sumter is gear-driven, and therefore there are no springs to break, trip levers to work loose, or other parts to give mechanical troubles. Many of the manufacturers tested Sumter Magnetos in comparison with others for over two years before adopting them. The dealer should specify Sumter Magnetos, because they are especially made for stationary engines, in a factory that makes Magnetos for stationary engines only. This is an

PLAINTIFF'S EXHIBIT 41.

This (physical) exhibit is a booklet put out by the Sumter Electrical Company in 1915 after it abandoned its effort to stem the tide of the Webster Company's successful oscillating magneto and when it appropriated the inventions of the patents in suit (R. Vol. 1, p. 402). On pages 38 to 44, inclusive of this exhibit appear illustrations and descriptions of the infringing machine which the Sumter Company sold in 1915.

Exhibit 41—pages 38 to 44, inclusive.

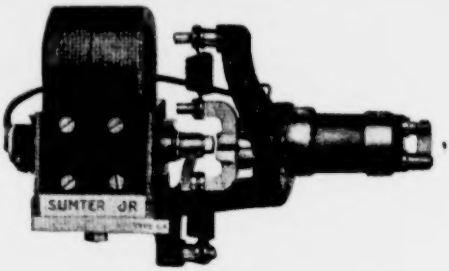


FIG. 1

TYPICAL OUTFIT. ALL MODELS HAVE HAND-STARTING ATTACHMENT, AND ADVANCE AND RETARD TIMING, WITH SAME SPARK INTENSITY OVER ENTIRE RANGE OF TIMING AND ENGINE SPEED.

One end of each spring is connected directly to the trip lever, eliminating the strain and side twist present where the springs are connected to the Magneto shaft several inches from the point of trip. This not only makes for greater *simplicity*, but adds considerably to the efficiency, as the trip lever is *direct acting* on the shaft of the igniter electrode, which carries a small finger having an adjusting screw, and which receives only a true radial impulse, eliminating any tendency to cause the movable electrode shaft to stick or bend or become unseated so as to permit the igniter to leak.

The engine push rod moves the trip lever against the tension of the springs, through an arc of about thirty degrees. At the proper time, the push rod slips off the trip lever, allowing same to recoil. During the recoil, a pin in the trip lever strikes the finger on the igniter shaft, causing a separation of the igniter points.

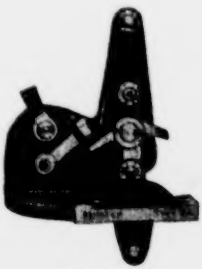


FIG. 2



FIG. 3

Fig. 2 shows working parts as a unit with the bracket, without the Magneto, it being entirely feasible to operate the engine by connecting battery to the igniter terminal.

The PLUGOSCILLATOR, being independent of the Magneto, or any springs, etc., carried thereon, different size Magnetos may be used for different sized engines. As a large number of sizes of SUMTER Standard Magnetos are available, the engine manufacturer is enabled to effect quite a saving by securing an equipment adapted to a particular engine, and does not have to invest in more Magneto than is necessary.

All wearing parts are of high carbon steel, carefully hardened. The construction permits of a large heavy bearing for the trip lever, and all thrust is taken by this bearing, supported by a heavy web in the bracket casting. In other arrangements, the thrust and wear is taken by the Magneto shaft. Our arrangement and bearings not only insure *durability*, but the number of parts are actually less, with a consequent reduction in cost.

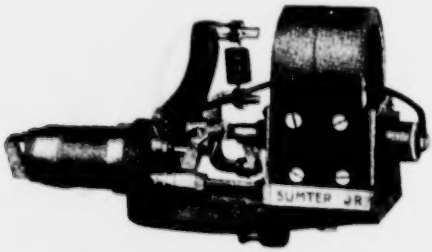


FIG. 4

IN CASE OF EMERGENCY, BATTERY MAY BE SUBSTITUTED FOR THE MAGNETO, WITH NO CHANGE, EXCEPT TO DISCONNECT WIRE FROM MAGNETO AND CONNECT TO BATTERY. REMOVING THE MAGNETO FROM THE BRACKET IN NO WAY AFFECTS THE RUNNING OF THE ENGINE. THIS "TROUBLE INSURANCE" FEATURE IS NOT FOUND IN ANY OTHER OSCILLATING ARRANGEMENT. (SEE FIG. 2, PAGE 38.)

Observe that the action of the springs is *direct* on the trip finger, the action of the trip finger *direct* on the igniter and Magneto shafts, and that all of the operating parts are closely grouped together and *definitely related*, so there is no chance for misadjustment due to wear, to be multiplied by leverage between the parts, as is the case where the igniter is a distance from the Magneto.

The *igniter equipment* is worthy of special mention. The movable electrode is a heavy drop forging. The insulated electrode is N. G. E. A. Standard, and can be taken out and replaced in a moment's time, without disassembling the mica insulation from around the stem. We claim this is the most efficient and durable electrode known, as it will stand a high tension spark without break-down—a test which few electrodes in make-and-break igniters will withstand.

This Interchangeable Electrode, as described on page 18, appeals strongly to the engine jobber and user, as it is as easily replaced as a spark plug, besides being soot- and leak-proof. The rivet type of contact point of meteor wire is provided in both electrodes, and is easily and cheaply renewed.

Should the bracket be removed from the engine, or the Magneto from the bracket, there is no possibility of the relation of the various parts to each other being changed. A novice can safely take off the bracket to clean the igniter, with no fear of disarranging the timing.

The PLUGOSCILLATOR enables a standard Sumter Magneto to be used as an Oscillator, thereby securing *additional efficiency* at *less cost.*

The SUMTER Magneto is well and favorably known, being admittedly the most extensively used Magneto in the stationary engine field.

SUMTER Magnetos are free from brush, collector, winding, and magnet trouble, and particular attention is called to the fact that the armature has a laminated, wire-wound core, and square sub-shafts riveted into bronze heads, affording the maximum current output with minimum size and weight. Comparative tests will prove this efficiency is not secured with other forms of construction.

A one-piece shaft is not employed, although cheaper, because of the loss in efficiency; and efficiency in a Magneto means *easy starting.* One-piece shafts may be necessary where the armature shaft carries the strain of the oscillating springs on one end and trip lever on the other; in other words, where the Magneto carries the operating mechanism. The PLUGOSCILLATOR eliminates this condition.

In range, as well as current output, the Sumter Magneto excels. Wear in the engine mechanism is compensated by this range, and will not affect the spark, as occurs with short-range Magnetos.

By portable test equipment, carried by our demonstrators, we can show the current output and range of Sumter Magnetos and others. We welcome investigation.

Time, not argument, has proven the *durability* of Sumter construction. Representative makers who used them five years ago are still using them. We never saw one worn out.

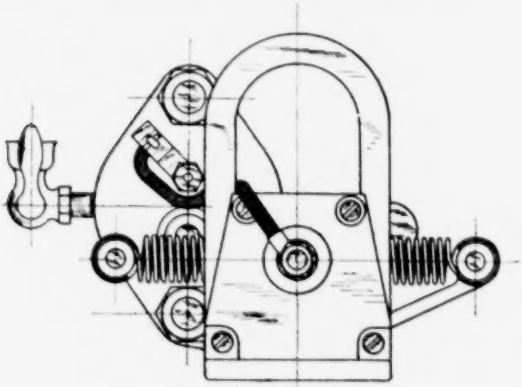


FIG. 5, TYPE CD

PLUGOSCILLATOR IS FURNISHED FOR ANY TYPE OF ENGINE, AND CAN BE MOUNTED TO OPERATE FROM PUSH ROD, SIDE SHAFT, OR, IN FACT, ANY MOVING PART OF THE ENGINE. USUALLY NO CHANGE IS REQUIRED IN THESE PARTS. ANY STANDARD SUMTER MAGNETO CAN BE USED WITH THE PLUGOSCILLATOR.

Comparison and test will prove that the PLUGOSCILLATOR is a perfected device. Like all Sumter products, it has been developed to a high state of efficiency, and has sufficient reserve power to meet the requirements of field service in the hands of the inexperienced.

The PLUGOSCILLATOR throws no undue strain on the operating parts of the engine. With some devices, it is necessary to redesign the entire operating mechanism.

In the PLUGOSCILLATOR, the strain and wear are taken by one or two inexpensive parts, *carried on the bracket*, and easily renewable, and not by the Magneto, which is necessarily the most expensive part of an ignition outfit.

Manufacturers using both oscillating and rotary equipment will appreciate the convenience of having only *one* type of Magneto to meet *both* requirements. Furthermore, with the PLUGOSCILLATOR, any make of rotary Magneto of standard dimensions could be used. The manufacturer is not irrevocably committed to a monopolized or special device, the manufacture of which might be discontinued, leaving the engine manufacturer with a lot of engines arranged for Magnetos no longer procurable.

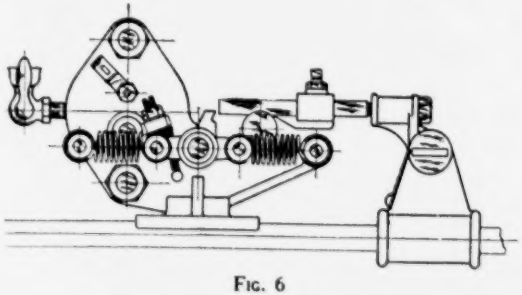


FIG. 6

TYPE CD BRACKET, SHOWING PUSH ROD MECHANISM OPERATING IGNITER, AND WITHOUT MAGNETO. NOTE HOW TRIP LEVER IS SUPPORTED ON INDEPENDENT BEARING, RELIEVING IGNITER SHAFT FROM STRAIN. WHEN MAGNETO IS ATTACHED, THERE IS NO SPRING STRAIN ON ITS BEARINGS.

The ability to secure any amount of advance or retard desired will particularly interest engine builders who desire to secure maximum efficiency and minimum fuel consumption. The spark produced, either full retard or advance, is always of *maximum intensity*, and this spark remains permanently efficient with the PLUGOSCILLATOR, owing to the excessive range of the Sumter Magneto used therewith, a feature not found in other Magnetos, and one worthy of the most careful consideration.

Hand firing, originally patented and introduced by Sumter, has been applied to the PLUGOSCILLATOR in a most simple and effective manner. The hand lever is mounted on the bracket, and is a part of same. It operates the mechanism same as the engine push rod, thereby producing a spark enabling the engine to be started from a standstill, provided the necessary compressed charge is in the cylinder.

The PLUGOSCILLATOR is arranged for priming cup, the opening through the igniter being so positioned as to deliver the fuel near the points. Provision is made for properly lubricating all working parts, and, as there is less side thrust, less care in this connection is necessary than with other types.

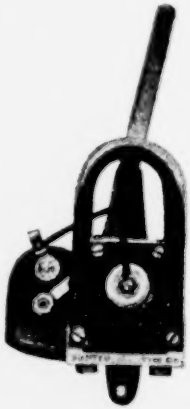


FIG. 7
END VIEW, SHOWING HAND LEVER

There is only about six inches of wire used with the PLUGOSCILLATOR, so all danger from short circuits or imperfect connections is eliminated. This wire connects the terminals on igniter and Magneto, so as to be easily disconnected at both ends when required.

As a standard Magneto is used, all well-known methods of testing same, by revolving the armature by hand in case of suspected trouble, can be applied.

With some types of Magneto, it is impossible to determine whether the Magneto is at fault or not, owing to its being so

inefficient as not to produce any noticeable current when revolved by hand, the action of the oscillating springs being necessary to produce a perceptible current.

We cannot too strongly emphasize the importance of *range* when considering a Magneto. Some have only seven to ten degrees. The Sumter, being of the rotary armature type, has thirty to forty degrees effective range. This simply means that if, through wear, faulty adjustment, or for any reason, the timing of the Magneto is varied as much as ten degrees with the first-mentioned Magneto, the ignition would fail; whereas, with the Sumter, the difference in the quality of spark would be hardly noticeable.

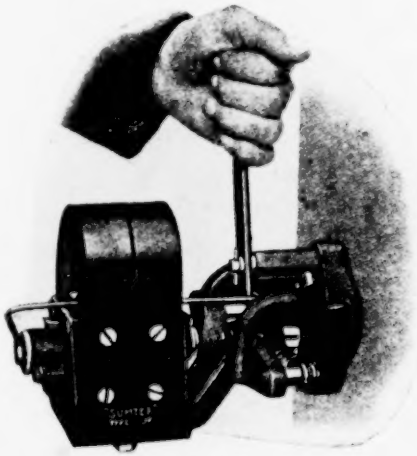


FIG. 8

HAND FIRING ATTACHMENT, WHEREBY ENGINES MAY BE STARTED FROM A STANDSTILL

Judge Cooper's Revolutionary Decision.

UNITED STATES DISTRICT COURT,

NORTHERN DISTRICT OF NEW YORK.

The American Laundry Machinery Company *et al.*, *Plaintiffs*, *vs.* Prosperity Company, Inc., *Defendant.* } Equity No. 417.

CHARLES NEAVE, MAXWELL BARNS and E. W. BROCKETT,
Attorneys for Plaintiffs,
5 Nassau Street,
New York City.

ARTHUR E. PARSON, ESQ.,
Attorney for Defendant,
Syracuse, N. Y.

COOPER, J.

Motion is made to dismiss the Bill of Complaint on the ground that:

> "It does not appear from any allegations in the (amended) Bill of Complaint that, more than two years prior to the date of filing of the alleged divisional application No. 334,785, of the Andree patent in suit No. 1,379,601, the alleged inventions of said patent (a) were not in public use or on sale in this country (b) were not patented or described in any printed publication in this or any foreign country."

The complaint makes the proper and usual averments in these respects, so far as the prior or parent patent is concerned, and the sole question here involved is as to the necessity of repeating these allegations as to the divisional application.

By a recent decision the Supreme Court has held the two year limitation for the filing of applications (Revised Statutes, Sec. 4886) applies to a divisional, as well as an original application.

Chapman v. *Wintroath*, 252 U. S., 126, 135.

The following recent authorities have held that the effect of the decision in the Chapman case (*supra*) is to fix the period during which divisional applications must be filed, at two years from the date of issuances of a prior patent.

Splitdorf Electrical Co. v. *Webster Electrical Co.*, 283 Fed., 83, 93.

Wahl v. *Main*, 280 Fed., 974.

Ex parte Nathan, 279 Fed., 925.

DeFerranti v. *Harmatta*, 273 Fed., 357.

Ransdell v. *Johns*, 273 Fed., 365.

Replogle v. *Kirby*, 269 Fed., 862.

Wills v. *Honigmann*, 267 Fed., 743.

The plaintiff concedes that if the two year rule applies to the divisional application, the bill is defective in not making the appropriate averments.

In view of the foregoing, the motion to dismiss must be granted, with leave to amend.

Judge Cooper Reversed.

UNITED STATES CIRCUIT COURT OF APPEALS

FOR THE SECOND CIRCUIT.

Before:

HON. CHARLES M. HOUGH,
HON. MARTIN T. MANTON,
HON. JULIUS M. MAYER,
Circuit Judges.

American Laundry Machinery Company and Metropolitan Trust Company of the City of New York.
Plaintiffs-appellants;
vs.
Prosperity Company, Inc.,
Defendant-appellee.

Appeal from final decree in equity entered in the District Court for the Northern District of New York.

Plaintiffs brought the usual patent bill on No. 1,379,601 and another patent.

In respect of the above numbered patent the bill states in usual form that the patentee, being

> "the first, etc. inventor of certain improvements not known or used by others in this country before his invention . . . and not patented or described in any printed publications in this or any foreign country before his invention thereof for more than two years prior to his application . . . and not in public use or on sale in this country for more than two years prior to (said) date of application . . . and not patented . . . on an application filed more than twelve months prior to his said application,"—

did on June 7, 1916, file in the Patent Office an application for Letters Patent.

It is then pleaded that

> "While the said application aforesaid was pending in full force and effect, said invention never having

> been abandoned, it was duly divided and a divisional application for the said invention"

was duly filed by the patentee on October 31, 1919; which divisional application ripened into the patent in suit on May 24, 1921.

This bill was met by a motion to dismiss because

> "It does not appear from any allegations in the bill of complaint that, more than two years prior to the date of filing of the alleged divisional application . . . the alleged inventions of said patent (a) were not in public use or on sale in this country, and (b) were not patented or described in any printed publication in this or any foreign country."

This motion the District Court granted and dismissed the bill. Plaintiffs appealed.*

CHARLES NEAVE for plaintiffs-appellants;

ARTHUR E. PARSONS and ALBERT F. NATHAN for defendant-appellee.

HOUGH, C. J.

The matter at bar is interesting and not unimportant; for if the order appealed from be well founded, its effect is to render a familiar portion of patent office practice extremely dangerous for those acquiescing therein, yet such danger is said to be created by a decision of the Supreme Court;—*Chapman* vs. *Wintroath*, 252 U. S., 126.

Under what the cited decision calls "the statute which is fundamental to all others in our patent law," (R. S. 4886) patents are granted to those inventing new and useful arts which (*inter alia*) were not in public use, and not patented or described for more than two years "prior

* The form of the order appealed from is open to criticism, and it is not overlooked that the order as entered affects only one patent. But as these technical difficulties might have been overcome in the court below and neither party has referred to them on this hearing, we pass them by, without by silence approving the practice.

to his (the petitioning inventor's) application." Under this act it is good pleading for plaintiff in a patent suit, to negative the exceptions of the statute in his bill; and this the present plaintiff did, as shown above.

It being "difficult, perhaps impossible" to lay down general rules determining when improvements should be embraced in "one, two or more" patents, discretion must be left to the Patent Office on this "nice and perplexing question." (*Bennet* vs. *Fowler*, 8 Wall. 445 at 448.) Accordingly the office has for many years made rules on what are too well known as "divisional applications" to need explanation; but the statutes may be searched in vain for anything about division.

The sense of the rules is that if a single application claims "several inventions," and the "independence of the inventions" be clear, the division will be insisted on "before any action on the merits"; but otherwise at any time during the pendency of the application. That is, division may be, and often is, required years after application filed; and when it is required the applicant must "elect" to which invention he will limit his pending application; while the other inventions "may be made the subject of separate applications". (Rule 42). If the applicant does not agree with the ruling requiring division, he may appeal, and thereby probably delay obtaining any patent; but no applicant can justly be blamed for acquiescing in a command by lawful authority; much less can he properly be made to suffer loss by obedience.

The patent at bar was divided, and the applicant elected to prosecute that part of his invention now represented by the patent in suit, in a "separate application," *i. e.*, a "divisional" one. The matter is so pleaded; and from the bill the necessary legal inference is that everything material, both in specification and claims of

the divisional application was fully contained in the application originally filed. There is nothing of laches, estoppel, abandonment or intervening rights suggested in this case. The solicitation of the patent ran smoothly for all we know, except for a difference of opinion between solicitor and examiner, as to how *many* patents the original disclosure justified.

The defendant has not answered, the facts at present stand as above set forth, but by motion equivalent to a general demurrer, it is asserted and has been held by the court below, that plaintiff must here allege (and subsequently prove) that the invention of this divisional application, was not patented, described, in public use nor on sale for more than two years prior to October 31, 1919.

In other words, and in this case, the inventor might have made, used in public and sold his invention on the day after he filed his application on June 7, 1916; and then because he acquiesced in a divisional ruling in 1919, invalidated *in limine* whatever be requested by the "separate" application provided for by the rule and known to the profession long before the present code of patent practice. And this is said to be the peremptory rule of the Chapman case *supra*. We feel assured that no such rule exists.

First. There is no intent shown by that decision to overrule earlier cases dealing with divisional applications in no "hostile spirit." Some are cited with approval at page 137 of the report. Divisional and renewed applications (absent intervening rights) should logically be treated alike;—see *Godfrey* vs. *Eames*, 1 Wall. 317; *Smith* vs. *Goodyear*, 93 U. S., 486.

Second. The decisions in this and other circuits distinctly holding the contrary of the rule asserted, were not overruled or adverted to; *Victor Co.* vs. *American*

&c. Co., 145 Fed., 350; *General &c. Co.* vs. *Continental &c. Co.*, 256 Fed., 660; *Rosenwasser* vs. *B. E. Mnfg. Co.*, 264 Fed., 114. Some of these cases treat of renewed applications;—however they show the analogy; but we might rest decision, so far as we are concerned, on the last citation. It cannot be thought that the Court intended to overset without comment the whole current of authority; something so firmly established that it had long passed unchallenged into textbooks.

Third. The Chapman case, in our opinion, did not decide, nor touch upon the point at bar. As may be seen by examining the record of that litigation, it began with an examiner's ruling that Chapman was guilty of laches in not basing *any* claim on a disclosure he had made in a pending application, until some twenty months after Wintroath had obtained a patent for the same invention.

It is this theory of laches that underlies and in truth constitutes the decision in Chapman's case. The result is that Chapman was finally held not guilty of laches in taking (for interference with Wintroath) the latter's claim, and annexing the same to his specification, more than one year, *i. e.* twenty months after Wintroath obtained a patent. Delay, inaction or laches were measured by the two year space of R. S. 4886 and other sections of the patent law and not by R. S. 4894, as the lower court had ruled in *Rowntree* vs. *Sloan* 45 App. D. C. 207. But it must be borne in mind that this is reasoning merely from analogy; it is judge-made law as distinguished from statute law,—the statute is silent. Furthermore it asserts agreement in result with the Patent Office ruling of long standing, which *Rowntree* vs. *Sloan supra* had upset.

The court below has stated appellee's position by the assertion, that the Chapman case "has held that the two year limitation for the filing of applications (R. S. 4886)

applied to a divisional as well as an original application." As thus stated, no such ruling can be found in the Supreme Court's opinion; and no justification for it can be found in the statutory language. But it is evidently possible to assert the highest court as holding that where no claim was made in the original specification, a divisional application making a claim already appropriated in substance by an issued patent, must be filed within two years of the publication of that patent. The reporter perhaps so understood the court (see first paragraph of syllabus), and the Seventh Circuit seems to have accepted that view. (*Splitdorf &c. Co.* vs. *Webster*, 283 Fed., 83, at p. 93).

We think this an erroneous reading. There is no reason for any such special rule as to divisional applications; on reason the objection to belated appropriations in interference or otherwise of claims of published patents, is just as valid when the appropriator is an original applicant whose application is incapable of division. What the Office and all the courts were considering in the Chapman case, was the evil of applicants who had not claimed, watching the published art, and demanding interference with men whose patents quite likely suggested to them what they might have done. Such men can only be disciplined under existing statutes, by somewhat drastic imputations of laches, or establishing estoppels; and the Chapman decision has we think been so understood by the very court whose endeavors at discipline the Supreme Court found too drastic. For example, *Re Nathan*, 279, Fed., 925, pointing out that "no excuse is offered" by the divisional applicant for not filing within two years of issue of intervening patent. If the rule were not of assumed or imputed laches, but of statutory firmness, why refer to excuses? Also, see *Ransdell* vs. *Johns*, 273 Fed., 365, where no division of

application was made, and (semble) none was possible, but the doctrine of Chapman's case was applicable.

We thus find no compulsion to depart from the obviously equitable rule certainly long settled in this circuit, and we still think in the Supreme Court also, that in the absence of laches, estoppel or intervening rights, a divisional application relates back to the original from which it was carved, and will be regarded as having the filing date and priorities of that original. The ordinary difficulty with divided, renewed and sometimes even amended applications, is that they are efforts to validate something that was not carved out of anything but second thoughts, and cannot be called amendments of any original. This case is wholly free from such objections.

Decree reversed with costs, and cause remanded for further proceedings not inconsistent with this opinion.

Supreme Court, U. S.
FILED
FEB 26 1924
WM. R. STANSBURY,
CLERK

IN THE

SUPREME COURT OF THE UNITED STATES

No. 93

OCTOBER TERM, 1923

WEBSTER ELECTRIC COMPANY,
PLAINTIFF-PETITIONER,

vs.

SPLITDORF ELECTRICAL COMPANY,
DEFENDANT-RESPONDENT,

BRIEF IN BEHALF OF DEFENDANT-RESPONDENT

CHARLES L. STURTEVANT,
EUGENE G. MASON,
DAVID B. GANN,
BALLARD MOORE,
For Defendant-Respondent.

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IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, A. D. 1923

No. 93

WEBSTER ELECTRIC COMPANY,
PLAINTIFF-PETITIONER,

vs.

SPLITDORF ELECTRICAL COMPANY,
DEFENDANT-RESPONDENT,

BRIEF AND ARGUMENT FOR DEFENDANT-RESPONDENT

This case comes up on certiorari directed to the Court of Appeals of the Seventh Circuit. It involves questions of law of great importance to the Patent System of the United States, the application of the doctrine of abandonment, laches, equitable estoppel and direct estoppel to the obtaining by a party of a valid patent upon an invention more than two years after the setting up of an adverse right as asserted in an intervening patent filed between the date of filing of the parent application and the filing of the so-called divisional application. It also involves considerations of the question of estoppel based upon numerous other inequities of plaintiff in securing the patent, which will be fully pointed out in the various chapters discussing the same in the brief.

CHAPTER I.

Statement of the Case.

As originally filed, October 12, 1915, the bill of complaint in this case was based on eight patents, and the reissue patent 13,878, February 9, 1915, the original number being 1,055,076 March 4, 1913, these being known as the *Podlesak* patents, under which the Webster Electric Company claimed rights by virtue of license from the Podlesaks, exclusive, except so far as rights to themselves, their heirs and assigns, were reserved to the Podlesaks. The reserved rights had been transferred to the Sumter Electrical Company. The bill of complaint was directed against the Podlesaks and the Splitdorf Electrical Company, as also the Sumter Electrical Company, the latter having transferred its rights to the Splitdorf Electrical Company.

On September 24, 1918, the patent of Kane, 1,280,105 (patent in suit), was issued to the Webster Electric Company.

October 25, 1918, an original bill, in the nature of a supplemental bill, was filed—bringing in that patent as a supplement to the Podlesak patents already sued on.

Answers to the original bill of complaint were filed by defendants on December 14, 1915, and to the supplemental bill, with respect to the Kane patent, on December 4, 1918. The case went to trial in the District Court for the Northern District of Illinois, and Judge Sanborn, District Judge for Wisconsin in an opinion reported in 255 Federal Reporter, page 907, dismissed the bill as to the defendants except the Splitdorf Company, but held that corporation guilty of infringement as to two of the Podlesak patents, 1,141,956, and reissue 13,878, and the Kane patent 1,280,105, issued September 24, 1918. Appeal was taken to the Court of Appeals of the Seventh Circuit, and by its decision reported in Federal Reporter 283, page 83 (Rec. Vol. I, page 835) said Court held that the rights reserved

to the Podlesaks, their heirs and assigns, to manufacture, use and sell the invention covered by the Podlesak Patents passed to the defendant, Splitdorf Company, by assignment from the Podlesaks. The bill of complaint was, therefore, dismissed as to the Podlesak patents; and as to the Kane patent, the three claims therein sued on, Nos. 3, 7 and 8, the Court of Appeals of the Seventh Circuit held claim 3 not infringed and claims 7 and 8 invalid by anticipation, on the prior art; reversing the decision of the District Court in toto.

During the pendency of the appeal, the Supreme Court of the United States rendered its decision in the Chapman-Winthroath case, recorded in 252 U. S., page 126. In the brief and argument before the Court of Appeals the defense of laches and the inequitable conduct of the plaintiff corporation—in attempting to prolong the monopoly it had already enjoyed under the Milton and Podlesak patents for many years beyond the terms of those patents, its delay in filing until adverse rights had been existent more than two years, to say nothing of the attempt, by acquiring an adverse title, to destroy the reserved property of its licensors—were dwelt upon at length. The Chapman-Winthroath case, in the language used therein apparently was decisive on one of the questions involved, namely, that of laches by failure to claim the subject matter of the invention in controversy, until more than two years had elapsed from the publication of an intervening patent i. e., the assertion of an adverse right. A public use also by the plaintiff had been going on for about six years before the filing of this divisional application upon which the Kane patent in suit was granted, and nine years before the claims sued on were filed. There had been a prior publication of a Milton British patent about six years before this divisional application was filed, and nine years before these claims were filed. There had been a three years public use by the defendant, and in fact the particular claims sued on in this case were not inserted in the divisional application *until three years after the original suit had been brought.*

The Court of Appeals, in its first decision as above referred to, did not find it necessary to consider the question of laches, or any of the inequities relied upon by defendant, for they held, as to the Kane patent, that claim 3 was not infringed, and that claims 7 and 8 were invalid in view of the prior art.

A petition for re-hearing was filed by plaintiff, in which it was expressly stated that the ruling of the court was accepted as to all matters except the holding as to the invalidity of claims 7 and 8 of the Kane patent, in view of the prior art, the language of the petition being that the re-hearing was asked—

> "on the single question of the validity of claims 7 and 8 of the Kane patent 1,280,105," Record, Vol. I., page 853, see also Record Vol. I, page 913.

The Court of Appeals of the Seventh Circuit granted the re-hearing, limiting the matter at issue to the determination of that particular question. Such re-hearing was had. In their decision on the re-hearing of the case, the court reversed the former ruling as to the anticipation of claims 7 and 8 by the prior art patents introduced by defendant, but upheld defendant's contention that said claims were invalid by reason of the inequities practiced by the plaintiff in its procurement of these claims by reason of laches, and also held that the case was controlled by the doctrine announced by this court in the Chapman-Winthroath case *supra*. The decision of the Court of Appeals on the re-hearing is reported in Federal Reporter 283, page 93. (Record Vol. I, page 918).

CHAPTER II.

Certiorari Granted on Misrepresentation as to Court of Appeals Decision.

The case is before this Court on certiorari. While it is perhaps only reasonable to assume that this court will limit its review of this case to the issues decided by the Court of Appeals on re-hearing, namely, the validity of claims 7 and 8 of the Kane patent, nevertheless, as we understand the case comes before your Honors in its entirety, it will be necessary to consider all lines of defense set up, which will necessarily lengthen the brief materially. The discussion on these points, however, may be disregarded if only the defenses based on estoppel, as to claims 7 and 8 are to be considered.

Since the *raison d'etre* for the grant of the petition for certiorari was the ruling of the Court of Appeals as to the application of the Chapman-Winthroath doctrine of this court, we shall devote a chapter (VIII.) to a discussion of the Chapman-Winthroath case and its applicability to the facts set up in the present case.

It may be well to call attention at this point to the contention contained in our brief, in reply to petition for certiorari, that this case did not call for the grant of such petition. The brief filed by the petitioner was drawn in such a way as to indicate that the Court of Appeals of the Seventh Circuit had broadly taken the position that the *statutory* bars as to *public use*, *prior publication*, etc., had been held by the Supreme Court in the case of *Chapman* v. *Winthroath* to apply to *divisional* applications based upon, or *renewals* of, a parent case and that in such application of the doctrine said Court of Appeals has gone contrary to many decisions of this court, as well as of Circuit Courts of Appeal—giving to a divisional application the same benefits as to priority as were given to the parent

case. A careful reading of the decision of the Court of Appeals of the Seventh Circuit entirely negatives the contention made by the petitioners in this case. So far as the Court of Appeals of the Seventh Circuit referred to the Chapman-Winthroath case, they applied it in the same manner as was applied by this Court in its application of the facts in the Chapman-Winthroath case, and as it has been applied by the Court of Appeals of the District of Columbia in the cases which have been decided subsequent to that case. That is, the Court of Appeals of the Seventh Circuit held that the adverse intervening rights of other parties had accrued more than two years before the filing date of this so-called divisional application by Kane, and that the doctrine of equitable estoppel was applicable, and by analogy to the two years statute, the two years accrued adverse intervening rights became a bar. That is all that can be gleaned from the decision of the Court of Appeals of the Seventh Circuit—as to its application of the doctrine of Chapman-Winthroath in this particular case.

Furthermore, the Court of Appeals of the Seventh Circuit, as will be seen from a perusal of the decision—while holding that the Chapman-Winthroath decision was controlling as to the particular state of facts involved in this case—expressly said that it did not decide the case solely on the grounds stated in that decision, but that on the general grounds of abandonment, laches and the inequities on the part of the plaintiff corporation, said plaintiff had lost its rights to the subject-matter of the claims 7 and 8, sued on.

> "But we are not required to rest our decision solely upon the two year period fixed by the statute. Laches may arise and become an effective bar to relief under a variety of circumstances. Laches is based upon delay and delay is a relative term.
>
> "In the last paragraph of the opinion in *Chapman* v. *Winthroath*, we find the court referring to laches other than that defined and fixed by the statute by calling attention to the absence of any evidence in the

case under consideration that would warrant any such finding. The court says:

> 'As has been pointed out, the Examiner of Interferences did not permit the introduction of any evidence with respect to laches or abandonment and the Court of Appeals rests its judgment, as he did, wholly upon the delay of the Chapmans in filing their divisional application for more than one year after the Winthroath patent was issued, as this appeared 'on the face of the record.' While not intending to intimate that there may not be abandonment which might bar an application within the two-year period allowed for filing, yet upon this discussion of the statutes and decisions, we cannot doubt that upon the case disclosed in this record, the Chapmans were within their legal rights in filing their divisional application at any time within two years after the publication of the Winthroath patent, and therefore the judgment of the Court of Appeals must be reversed.'

"Turning to the facts in the present case and for the moment ignoring any two-year rule, we find Kane's position in support of claims 7 and 8 untenable. Not only did he not intend to make these claims, in fact he knowingly and intentionally failed to present them, but not until eight years after he filed his original application and more than nine years after the device was in common use, during all of which time it was in general use, did he seek to dominate the art by inserting these amended claims into the patent.

When examined as to the new combination represented by these two claims, he testified that he had knowingly failed to claim it. The following testimony appears:

> "Q. What? Didn't Mr. Webster ask you to help him out in connection with the means of fastening the magneto and the plug to the engine?
>
> A. No, sir; he did not.

Q. He didn't discuss that at all with you prior to the time that you filed your application?

A. He did prior to the time we filed the application.

Q. Well, when was it he discussed that with you?

A. Discussed that with me when I showed him the drawing.

Q. Mr. Kane, is there anything on that drawing—the first one that you had—showing any means of regulating or determining what you call the cut-out of the spark?

A. No, sir; there is not.

* * * * * *

Q. Now, what did you tell him about the means by which the magneto and plug were to be attached to the cylinder?

A. Well, outside of telling him that by doing that we had a means of securely fastening the magneto to the cylinder, and also a means of cutting out a lot of intermediate and useless mechanism, I do not know as I told him very much.

Q. You did not consider it of very much importance; is that right?

A. It seemed to me a matter more of design than importance—invention.

Q. Is that what you told him?

A. Yes, sir.

Q. And you told him that you thought that it was not an invention, and was a mere matter of design? You told that to Mr. Sprinkle, did you, when you went to him to get a patent?

A. I told him it was a good means and preferred means of fastening the magneto on the engine.

Q. Well, I asked you if you told him that you thought it was a mere matter of design, and not an invention.

A. I possibly did, yes."

"Believing that the Podlesak invention was controlled through contract and otherwise, appellee was not greatly concerned about the question of who was

the first inventor. Its attitude in the Milton-Kane contest is not such as to invite the court's confidence in the sincerity of its protestations nor in the good faith of its assertion that it was not endeavoring to improperly prolong its monopoly beyond the period fixed by statute. Having secured a favorable decision from the patent office in this interference contest through control and ownership of both sides of the litigation, it then discovered that its asserted rights under its patent and under its contract with Podlesak were challenged, and it again amended its specifications, inserting the new claims which necessitated an interference contest with Podlesak. This contest was bitterly fought, appeals being taken from the examiner and then to the patent commissioner, and then to the Court of Appeals, with the result that appellee was found guilty of laches and the decision went against it.

Appellee filed the aforementioned amended application incorporating these nine new claims, on April 17, 1915; the first three were taken from the Podlesak patent, issued March 4, 1913, and the other six from the Podlesak reissue patent, dated February 9, 1915. In this adverse decision appellee acquiesced, wherefrom it appears that if appellee was guilty of laches in April, 1915, for failure to present the nine claims under consideration, it must *a fortiori* be found guilty of laches in failing to present claims 7 and 8 until June 17, 1918. The allowance of these last two claims upon the amendment of June 17, 1918, was upon *ex parte* application and was made by the Examiner, the adverse parties, of course, not being present to protest or point out the error of such allowance. The claims differ, as heretofore stated, from the claims in the Podlesak patent, in that they are broader in scope, but the difference is not sufficient to avoid the effect of the decision in the Podlesak interference contest. They depend for their support largely, if not entirely, upon that part of the specifications which were incorporated by amendment in 1915, which amendment was made to support the nine claims taken from the Podlesak patent and subsequently rejected as heretofore described.

We conclude Kane's laches barred his right to claims 7 and 8." (Record, Vol. I., p. 918.)

A perusal of this decision will clearly bring out the misrepresentations in the petition for certiorari, for the court said that

> "the precise question here presented was not squarely raised and therefore not decided in Chapman-Winthroath,"

then it expressed the view that

> "the effect of the holding is to fix the period during which such (divisional) applications must be filed at two years from the date of the issuance of the other patent."

This is not a holding that the statutory two years bars apply to divisional cases, but an application of the doctrine of equitable estoppel.

It is, therefore, respectfully submitted that the petition for certiorari apparently was granted upon a misunderstanding of the situation.

Before taking up the full discussion of the Chapman-Winthroath decision, and the meaning thereof as interpreted by the Court of Appeals of the Seventh Circuit, in its application to this instant cause, it will be necessary to bring before the Court facts shown by the record as to the prosecution of the Kane patent in the Patent Office and the acts of plaintiff corporation with respect to said application and other applications and patents which it controlled or under which it was licensed, as showing that this case clearly comes within the doctrine of equitable estoppel intended to be held by this Court in the Chapman-Winthroath case.

These matters will be discussed under various headings —first, as a general statement of proceedings relating to the grant of the patent in suit (Chapter III.); a chapter relating to the Kane patent and the Kane-Milton interference (Chapter IV), and a chapter bearing on the Kane-Podlesak interference (Chapter V). Then a short chapter

(VI) relating to *direct* estoppel by reason of a binding clause in the license contract between the Podlesaks and the plaintiff corporation, and finally a chapter (VII.) showing that the division was not a true division and that claims 7 and 8 were unwarranted.

From the history of the case and the acts of the plaintiff corporation, it will be made to appear that there have been in the procurement of Kane's claims 7 and 8, sued on, such a violation of all equities and such laches on the part of plaintiff corporation and Kane, as makes the validity of these claims impossible under application of well settled doctrines of this court even were there no Chapman-Winthroath decision.

It will also be necessary, since the entire record is before this court, if you should hold that defendant cannot prevail on the broad principles of equity, or those governing laches, or equitable estoppel; that the bearing of the prior art on these Kane claims 7 and 8 must be considered—that your Honors may be able to decide whether the Court of Appeals was correct in its first ruling that these claims were invalid by anticipation, based on the prior art—or correct in its second ruling that they were not so anticipated. This discussion is found in Chapter B of the appendix to this brief.

It will also be necessary to take up briefly the license contract which has been referred to in the statement of the case, and this discussion will be contained in the first part of the appendix to this brief. (Chapter A.)

CHAPTER III.

Brief Statement of Proceedings Leading to the Grant of the Patent in Suit.

Kane filed his original application February 2, 1910, (Record, Vol. II., page 502) disclosing and claiming in each and all of its *twenty-four* claims an **automatic cut-out** which would render the magneto inoperative when the engine exceeded a certain speed.

The testimony shows that this is what he considered he had invented, see testimony quoted above in the decision of the Court of Appeals and found in the Record, Vol. I, pages 275 and 277, and again on page 281, where Kane said he didn't consider that there was invention in the subject-matter here involved (the bracket), and so told his attorney.

Mr. T. K. Webster, Plaintiff-Petitioner's President, and a man of long experience in patent matters, expressed the opinion that there was nothing patentable in it, pages 255, 256, 273 and 308. This application went through its usual course in the Patent Office, and was allowed on appeal to the Board of Examiners-in-Chief and finally issued November 14, 1916, No. 1,204,573 with five claims (Vol. III, page 917) on the cut-out.

On January 14, 1915, Kane filed his so-called divisional application (Vol. III, page 625)—now, after many changes, become the patent in suit, but with no claims whatsoever to the subject of present claims 7 and 8, such claims not having been introduced until June 17, 1918 (Vol. III, page 687).

The express purpose of filing the *divisional* application (Vol. III, page 637) was to institute an interference with a patent of Milton, of May 12, 1914, on which the application had been filed October 28, 1910, but on which a British Patent had been filed October 28, 1909 (Vol. II., pages 397-403) and printed and published a few weeks thereafter.

By referring to the affidavits in Exhibit 54 which is a certified copy of the file wrapper and contents of Kane's original application eventuating into patent 1,204,573, and printed in the Record, Vol. II, pages 500-621, it will be noted that, although filed with *twenty-four claims* on the automatic cut-out feature; after the various citations by the Patent Office and amendments by the applicant on February 17, 1912 (Record Vol. II, page 531) the case was restricted to two claims and reached on May 9, 1914, a con-

dition of final rejection by the Patent Office of the only *two* claims remaining (Record, Vol. II, page 540).

On October 22, 1914, over four years after filing date, and two years and eight months after the abandonment of all claims but those two, applicant filed amendment, copying the claims of Milton's patent, and asking for an interference (Vol. II, pages 541-549). On refusal of the examiner to enter the amendment (pages 450 and 451) he filed some months later, January 14, 1915, his divisional case, the file wrapper and contents of which is Defendant's Exhibit 55, and is found in the Record in Vol. III, pages 623-699.

Milton and Kane, the latter a subordinate of the former, who was chief engineer and expert on magneto manufacture, had both been in the employ of the Plaintiff-Petitioner corporation, and the Milton patent was owned by it and it was operating under it. The history of this interference, including the questionable way in which it was conducted, is given in the succeeding Chapter IV.

Later, viz: on April 17, 1915, (Record, Vol. III, pages 634-637) nine more claims were introduced, three like the claims of the Podlesak patent 1,055,076, of March 4, *1913*, and six copied from the reissue of that patent No. 13,878, dated February 9, *1915*.

These claims were at first rejected as not readable on Kane's disclosure, either original or on the divisional case (Vol. III., page 642). This rejection was repeated (page 654) and on petition to the Commissioner of Patents, the Examiner's action was affirmed (Vol. III, pages 670-673). After a further amendment by which extensive additions were made to the specification (pages 675-677) an interference with the Podlesak patent was finally declared upon the nine claims in question (pages 679-682). This interference was decided in favor of Podlesak by the Patent Office and the Court of Appeals of the District of Columbia. Its history is given in Chapter V.

Following the adverse decision of the Court of Appeals of the District of Columbia, Plaintiff-Petitioner's

counsel, Kane's attorney, filed an amendment to Kane's application on June 17, 1918 (Vol. III., pages 687), nine years after the Milton Bristish patent, and five years after the Podlesak patent, by which he introduced two new and very much broader claims than any theretofore made by Kane during the eight years his application had been pending in the Patent Office, supporting the amendment with an argument respecting the allowability of the claims, in which reference was made to an interview with the Examiner by Plaintiff's counsel and plaintiff's general manager, Mr. Brown (Vol. III., pages 687-693).

Thus, in an *ex parte* proceeding, plaintiff was able, if those claims are held valid, to override a decision of priority against him, with which he stated his complete acquiescence (Vol. III., page 690); to destroy rights which had been in existence for many years, to dominate and in effect destroy patents (Podlesak) under which he is licensed and which, in the license contract, he had agreed to protect in the following language—

> "aid and assist each other in the prosecution of said applications and the obtaining of patents thereon and in any interference proceedings relating to their right of priority to said inventions, and in any suit or proceeding under any of said patents" etc. (Vol. I, page 53, second clause).

Finally, their actions, if approved, results in a prolongation of their monopoly under the Milton patent of 1914, expiring in 1931; and the Podlesak patent expiring in 1930; to September 1935.

If there is any reason in the doctrine of equitable estoppel, it can without question be applied here, and has been applied by the decision of the Court of Appeals here on review in the following language:

> "Believing that the Podlesak invention was controlled through contract and otherwise, appellee was not greatly concerned about the question of who was the first inventor. Its attitude in the Milton-Kane

contest is not such as to invite the court's confidence in the sincerity of its protestations nor in the good faith of its assertion that it was not endeavoring to improperly prolong its monopoly beyond the period fixed by statute. Having secured a favorable decision from the Patent Office in this interference contest through control and ownership of both sides of the litigation, it then discovered that its asserted rights under its patent and under its contract with Podlesak were challenged, and it again amended its specifications, inserting the new claims which necessitated an interference contest with Podlesak. This contest was bitterly fought, appeals being taken from the examiner and then to the patent commissioner, and then to the Court of Appeals, with the result that appellee was found guilty of laches and the decision went against it.

Appellee filed the aforementioned amended application incorporating these nine new claims on April 17, 1915; the first three were taken from the Podlesak patent issued March 4, 1913, and the other six from the Podlesak reissue patent dated February 9, 1915. In this adverse decision appellee acquiesced, wherefrom it appears that if appellee was guilty of laches in April, 1915 for failure to present the nine claims under consideration, it must be *a fortiori* be found guilty of laches in failing to present claims 7 and 8 until June 17, 1918. The allowance of these last two claims upon the amendment of June 17, 1918, was upon *ex parte* application and was made by the Examiner, the adverse parties, of course, not being present to protest or point out the error of such allowance. The claims differ, as heretofore stated, from the claims in the Podlesak patent in that they are broader in scope, but the difference is not sufficient to avoid the effect of the decision in the Podlesak interference contest. They depend for their support largely, if not entirely, upon that part of the specifications which were incorporated by amendment in 1915, which amendment was made to support the nine claims taken from the Podlesak patent and subsequently rejected as heretofore described.

We conclude Kane's laches barred his right to claims 7 and 8." Vol. I., pp. 924-925.

CHAPTER IV.

The Kane Patent and Kane-Milton Interference.

The bill of complaint in this case was filed October 12, 1915. The Kane patent in suit was not issued until September 24, 1918. It was brought into the case by a supplemental bill filed October 25, 1918. (Vol. I., p. 184). Plaintiff's predecessor had acquired the application for the patent on April 20, 1916 (p. 217), which was also sometime after the filing of the original bill.

Plaintiff's predecessor was also the owner of another patent covering the same invention, being the patent to Milton No. 1,096,048, dated May 12, 1914. (Vol. IV., p. 869.) It had been operating under that patent since the date of its issue—in fact, had paid the expenses of the preparation of the application in 1910 and its subsequent prosecution—had marked its magnetos as patented under the patent (Vol. I., p. 663), had asserted the patent against alleged infringers of it (Vol. II., p. 354), and had advertised the magnetos made under the patent as the "Milton Magneto." (Vol. II., pp. 15, 17, 25.) See also Webster Company booklet, Defendant's Exhibit No. 71, and blue print of Webster Company's working drawing of June 3, 1909, entitled "Details of Type D-2 Milton Magneto" (Defendant's Exhibit No. 21).

On August 17, 1915, this Milton patent was placed in interference with the then pending application of Kane (Vol. III., p. 643), who had filed an application based upon the same structure as Milton's, and had copied Milton's claims and introduced them into his application by amendment after the issue of the Milton patent, as hereinafter explained. (Rec., Vol. III., pp. 628-631.)

(Defendant's Exhibit 49, Record, Vol. II., pp. 360-499, contains the Patent Office record of the interference.)

Plaintiff's predecessor (hereinafter referred to as the

plaintiff for the sake of brevity), acquired the Kane application on April 20, 1916, as heretofore stated, and on the same day Kane revoked the power of attorney of the attorneys who had prepared and filed his application, and who had been conducting the interference in his behalf, and appointed plaintiff's counsel, Mr. Williams, to be his attorney in the further prosecution of his application and conduct of the interference.* Mr. Williams was already the attorney for Milton, having prepared and filed and prosecuted the application for his patent, as attorney for plaintiff and at its expense, so that when plaintiff acquired the Kane application and Mr. Williams was appointed Kane's attorney plaintiff had control of both sides of the interference.

In this situation of affairs, it was manifestly very greatly to the interest and advantage of plaintiff to secure a patent upon Kane's application, for the invention in question, if there was any basis upon which such a patent could be secured, for the reason that it would not only extend the period of the patent monopoly which it held under the Milton patent, but would afford opportunity for extending its scope as well. That is to say, a patent secured upon Kane's application would not expire for several years after the expiration of the Milton patent, and claims could be made in Kane's application not only corresponding to Milton's claims, but additional claims of broader scope if there was opportunity for them.

As the matter was worked out, in the manner hereinafter explained, the Kane patent issued on September 24, 1918, more than four years after the date of issue of the Milton patent, and contains not only all of Milton's claims, but additional claims of much broader scope than any found in the Milton patent.

The net result of the situation is that plaintiff now holds two patents for the same invention, one issued in

*The power of attorney ran to Mr. Williams and his partner, Mr. Bradbury. (Vol. II., p. 568.)

1914 and the other in 1918, the later patent containing all of the claims of the earlier patent, and additional and broader claims as well.

Referring now to the proceedings by which plaintiff secured this result, Kane's application had been filed on February 2, 1910, and Milton's on October 28, 1910, but Milton had filed an application upon his invention in Great Britain on October 28, 1909, which eventuated into British Patent 24,838 of that year. (Vol. II., 397-403). Upon the introduction of this into the interference Milton was given the benefit of the filing date of his British application (Vol. II., 405-413), and became the senior party in the interference. This occurred before plaintiff acquired Kane's application, and while the interference was being contested by really adverse interests; but before the time fixed for the taking of testimony on behalf of Kane as the junior party had expired (Vol. II., 415) plaintiff had acquired Kane's application. No proofs were introduced on behalf of either party,* as a result of which on September 6, 1916, a judgment awarding priority of invention to Milton, as the senior party, was entered by the examiner of interferences. (Vol. II., 416.)

On September 18, 1916, plaintiff's counsel stipulated with himself that this judgment "be vacated and times set for the taking of testimony and final hearing" (Vol. II., 419), and upon the filing of this stipulation in the Patent Office, on September 29, 1916, an order was entered vacating and setting aside the judgment and fixing new times for proofs and for final hearing. (Vol. II., 420.)

On October 17, 1916, plaintiff's counsel, as attorney for Kane, served notice on himself as attorney for Milton, "due and timely service" of which notice he acknowledged as attorney for Milton (Vol. II., 449), that on October 20, 1916, he would examine witnesses on behalf of Kane at

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*No explanation was offered by plaintiff of its failure to introduce any proofs on behalf of Kane, the junior party. The record shows it had ample opportunity to do so after acquiring the Kane application. (Vol. II., p. 415.)

plaintiff's office at Racine, Wisconsin, pursuant to which notice the depositions of certain witnesses were taken at that time and place (Vol. II., 458-463), and duly certified by the notary before whom they were taken, the certificate containing the statement "that the opposing party was not present or represented by counsel during the taking of said testimony." (Vol. II., 463.) The witnesses appear to have been examined by Mr. McCaleb, then an assistant in the office of plaintiff's counsel, who represented both parties notwithstanding the notary's certificate to the contrary.

On October 21, 1916, plaintiff's counsel again gave notice, as attorney for Kane, to himself as attorney for Milton, "due and timely service" of which was likewise acknowledged by him as attorney for Milton (Vol. II., p. 421) that on October 23, 1916, he would examine additional witnesses on behalf of Kane at his office in Chicago.

Pursuant to this notice additional witnesses were examined at the time and place mentioned, including the applicant Kane, and Mr. Webster, president of the plaintiff company. (Vol. II., 422-443.) And in addition to the examination of these witnesses plaintiff's counsel stipulated with himself that an affidavit of one Chiville, which he had prepared some time previously, might be introduced in evidence on behalf of Kane and "used with the same force and effect as if the statements therein contained had been made in answer to interrogatories propounded by counsel." (Vol. II., 444-447).*

On January 4, 1917, after the time fixed for proofs in the interference had expired, plaintiff's counsel further stipulated with himself that Mr. Milton might be examined in his own behalf (467) and proceeded on the same day to take the deposition of Mr. Milton at the office of plaintiff's counsel in Chicago, under the circumstances stated by Mr. Milton in his testimony (Vol. II., p. 473), the examination

*This affidavit was accepted and given the full weight of testimony by the Examiner of Interferences. (See his opinion, Vol. II., pp. 481, 482.)

being conducted by Mr. McCaleb, who had examined all of the witnesses on behalf of Kane. (468-473.) The notary's certificate in this instance, as in the preceding ones, stated "that the opposing party was not present nor represented by counsel during the taking of said testimony." (474.)

The interference was submitted to the examiner of interferences on the foregoing proofs, and on March 30, 1917, he filed an opinion awarding priority of invention to Kane (478-482) and judgment in favor of Kane was entered accordingly.

On July 19, 1917, it having come to the knowledge of the Commissioner of Patents, through another interference in which Kane's application was involved (Vol. II, 660-663), that plaintiff owned both the Kane application and the Milton patent, the commissioner vacated and set aside the judgment in favor of Kane, and dissolved the interference. (486).

On August 13, 1917, plaintiff's counsel filed a petition to the commissioner on behalf of Kane and the Webster Company (488-489) praying that his order of July 19th be vacated, and supported by the affidavit of plaintiff's counsel (490-495), in which petition, among other things, it was alleged

> "that now and at the time of the decision and judgment of priority by the examiner of interferences, dated March 30, 1917, the Webster Electric Company is not and was not the assignee of John Lewis Milton, one of the parties to the above entitled inerference.
>
> * * * * *
>
> "that now and at the time of said decision of the Examiner of Interferences, and at the time the testimony was taken on behalf of Kane and on behalf of Milton, the whole right, title and interest in and to the Milton patent involved in the above entitled interference is and was vested in Lynn A. Williams, Trustee.
>
> * * * * *
>
> "that they (petitioners) do not own nor control the Milton patent aforesaid, and are not in a position to execute or file either a disclaimer in the matter of

said Milton patent nor a concession of priority by or for Milton and in favor of Kane.

* * * * *

"that John Lewis Milton has, and throughout the conduct of the above entitled interference has had a direct financial and pecuniary interest in his patent."

The petition further recited that:

"The assignment records of the Patent Office show and have shown throughout the conduct of the above entitled interference who the owners of the Kane application and the Milton patent have been. * * * These assignment records show also that the Milton application theretofore owned by John Lewis Milton himself was assigned to Lynn A. Williams, Trustee, on April 10, 1912, and that the said assignment was recorded on December 13, 1915. Your petitioners show that no other assignments of the said Kane application or the said Milton patent have ever been executed or recorded and that the ownership of the said Kane application and the said Milton patent as it now exists is fully shown by the assignments of record in the Patent Office."

The facts were, as hereinafter shown, that plaintiff had purchased the application for the Milton patent, and other inventions, from Mr. Milton in April, 1912, for the sum of twenty-five thousand dollars ($25,000), part of which sum was paid in cash and part of which was covered by notes of plaintiff given to Milton. The Milton application was assigned to Mr. Williams as trustee, to be held by him until the notes were paid, and to be then assigned to the plaintiff. The record shows Vol. I., pp. 581, and 740) that the last of the notes was paid in June, 1916, more than a year prior to the order of the Commissioner (July 19, 1917) vacating the judgment in favor of Kane and dissolving the interference, so that from June, 1916, onward plaintiff was the full equitable owner of the Milton application and invention, although plaintiff's counsel continued to hold the legal title for it as trustee until a later date.

In the affidavit of plaintiff's counsel, filed in support of the petition and dated August 13, 1917, the purchase of the Milton application in the manner above described was set forth, and was followed by the statement (Vol. II., 492) that:

> "The Webster Electric Company *has not as yet completed payment of all of the said notes to Milton*, and I therefore continue to hold title to the said Milton patents and applications, including the Milton patent involved in the above entitled interference. Under the trms of the trust agreement, I am bound to continue to hold such title and do still hold it. The last of the aforesaid notes does not mature until July, 1919, and unless there is some advance payment of the unmatured notes, or unless there is some default in the payment of such notes as do mature, I shall continue to hold the title to the Milton patent involved in the above entitled interference until some time in 1919.
>
> While, therefore, the Webster Electric Company is in the process of acquiring title to the Milton patent involved in the said interference, the Webster Electric Company has not as yet acquired such title. Meanwhile John L. Milton has a beneficial interest in the said patent."

The affidavit referred (Vol. II., 493, 494) to the manner in which the proofs had been introduced in the interference for the purpose of securing a decision upon the question of priority by an impartial tribunal

> "in a case in which the Webster Electric Company was interested on behalf of Kane and in which Milton was interested in his own behalf, subject only to the right of the Webster Electric Company ultimately to acquire the Milton patent, and in the event that it should complete the payment of Twenty-five Thousand Dollars, as above set forth."

The affidavit further stated that:

"All parties interested had the fullest opportunity to produce all the available evidence."

And that:

"Throughout the interference and up to the present time John L. Milton had an interest in his patent, which was and still is adverse to the interest of the Webster Elictric Company in the Kane application in interference."

Upon the strength of this affidavit of plaintiff's counsel the petition was granted by the acting commissioner (the commissioner who had vacated the judgment and dissolved the interference having resigned and retired from office in the meantime) (Vol. II., 495-497), with the direction

"that the order of July 19, 1917, be vacated and the interference restored to the condition that it was prior to the entry of that order."

The showing of the record respecting the payment by plaintiff of its notes given to Milton is as follows:

On November 19, 1915, plaintiff's counsel wrote Mr. Milton a letter (Vol. I., 355, 356), in which he said:

"Mr. Brown of the Webster Electric Company has advised me, regardless of the execution of this trust agreement, that if on the first of each month hereafter you will forward not only the note which matures on that date but also the four additional notes which have the longest time to run the Webster Electric Company will pay all five of the notes. Mr. Brown was, in fact, a little surprised that you did not send him five of the notes on or about the 1st of November, and unless I hear from you to the contrary he will expect you to send him five of the notes for payment each month. If you prefer to have the Webster Electric Company authorize this I have no doubt Mr. Brown will do so if you will drop him a line."

In his acknowledgment of this letter to plaintiff's counsel Mr. Milton said (Vol. II., p. 357):

> "In your letter accompanying these papers you stated that Mr. Brown would be willing to give me a letter setting forth their willingness to pay the four extra notes each month until all of them are disposed of. If this could be done and still be agreeable to all parties, I should like to have it."

This arrangement was carried out, and on June 2, 1916, plaintiff's general manager, Mr. Brown, wrote Mr. Milton a letter (Vol. II., p. 357) in which he said:

> "We paid $1,000 of your notes yesterday and it had been our intention to request you to send the balance of them at that time, and if you will kindly do so they will be paid on presentation, and you may so advise the bank in sending them in."

Mr. Milton replied to this letter on June 7, 1916 (Vol. II., p. 357), saying:

> "Upon my return to the office this morning I found your letter of the 2nd instant and have this day advised the National Bank of Kentucky to forward the notes."

Mr. Milton testified that the last of the notes was paid in June, 1916 (Vol I., 581), and later on in the course of the trial below it was stipulated that such was the fact (Vol. I., 740).

Moreover, in a letter which Milton wrote to plaintiff's counsel on September 13, 1916, in response to a letter from plaintiff's counsel asking him to concede priority of invention to Kane (Vo. II., 131, 132, 358, 359), Milton said:

> "*While my title to this particular patent has passed*, I am still personally interested enough in it to see that the right sort of treatment is accorded it."

This letter to counsel was written eleven months prior to the filing of the petition and affidavit by that counsel of August 13, 1917.

Plaintiff's counsel stated to the court, in the course of a personal statement which was incorporated in the transcript on this appeal at his request (Vol. I., 793), that he did not know that the notes had been paid and the ownership of the Milton patent finally acquired by plaintiff at the time he filed the petition and affidavit, in August, 1917, upon which the order vacating the judgment in the interference was set aside and the judgment restored.

The question of priority or originality, as between Kane and Milton, will be discussed in the appendix to this brief, but it will be apparent, from what has been said that plaintiff can take nothing by virtue of the decision awarding priority to Kane in an interference proceeding in which it controlled both sides and which was conducted in the manner described.

CHAPTER V.

Kane-Podlesak Interference.

In addition to securing the claims of the Milton patent, in the manner above described, Kane also sought to secure some nine claims of the Podlesak Reissued Patent No. 13,878, under which plaintiff then held and now holds a license,* to which end he introduced into this application by amendment nine claims copied from the Podlesak patent. (Vol. III., 634-637, 639). This amendment was filed in the Patent Office on April 17, 1915 (Vol. III., 634) more than five years after the filing of Kane's original application on February 2, 1910. (Vol. II., 502). Of the nine new claims introduced by the amendment, the first three were copied from Podlesak's original Patent No. 1,055,076, dated March 4, 1913, and the remaining six from the re-

*This patent is a reissue of Podlesak Patent No. 1,055,076, included in plaintiff's license Exhibit D. Vol. 1, p. 53.)

issue of that patent, No. 13,878, dated February 9, 1915. (Vol. III., 907).

These additional claims were at first rejected as not readable on Kane's disclosure. (Vol. III., 642.) This rejection was repeated (p. 654) after an argument had been filed by Kane's attorney, and on petition to the commissioner the examiner's action was affirmed (670-673), but after a further amendment, by which extensive additions were made to the specification (675-677) an interference with the Podlesak patent was finally declared upon the nine claims in question. (679-682.)

By the amendment above mentioned, which was filed October 18, 1915, the entire descriptive matter found in the specification of the Kane patent as issued, beginning with the words "By referring" line 34 on page 2, and extending to and including line 104 on the same page, was introduced into the specification of the Kane application as a foundation for the new claims copied from the Podlesak patent, no foundation for such claims having previously appeared in the Kane application.* This new descriptive matter was not only *not found* in Kane's original application, filed on February 2, 1910, but it was *not contained* in his *divisional* application filed five years later, on January 14, 1915, upon which the Kane patent in suit was subsequently issued, having been introduced into the divisional application by the above amendment. By the same amendment of October 18, 1915, there was also introduced into Kane's specification the matter now appearing at lines 58 to 75 on page 1 of the specification, to lay the foundation for certain other claims of the Podlesak patents which were introduced by that amendment, and for which no adequate foundation had previously appeared in the application.

The proceedings in the Kane-Podlesak interference—that is, the Transcript of Record before the Court of Ap-

*As hereinafter shown, the Commissioner of Patents and the Court of Appeals for the District of Columbia subsequently held that there was no basis for the claims in Kane's application, even after the extensive addition made to it by this amendment, and finally rejected the claims on that ground.

peals of the District of Columbia, was a physical exhibit No. 56, in the court below, but this is contained in Volume III of the Record, pp. 940-1107. Reference will be made to it as the Interference Record. The decision of the Court of Appeals of the District of Columbia is Defendant's Exhibit 57, and is printed in Volume III. of the Record, pp. 701-702.

Upon the filing of the preliminary statements of the parties it was found that Kane's filing date was earlier than Podlesak's claimed date of invention, whereupon a rule was issued upon Podlesak (in accordance with usual Patent Office practice) requiring him to show cause why judgment should not be rendered against him. (Vol. III., Rec., 1057.) Podlesak thereupon moved to dissolve the interference (which he had not sought) upon three grounds, as follows:

First, that Kane had no right to make the claims in issue because of laches on his part, the claims not having been presented by him for more than two years after the issue of the original Podlesak patent, and not until sometime after the issue of the reissued patent.

Second, that the claims, properly construed, were not readable upon Kane's disclosure.

Third, that if the claims in issue were to be construed broadly enough to be readable upon both Podlesak's and Kane's disclosure, they were met by the prior art. (Vol. III., Rec., 1057-1061).

This motion was supported by a brief filed on behalf of Podlesak and printed in the Interference Record referred to (pp. 1062-1067).

The motion was denied by the Examiner of Interferences, upon a report by the Law Examiner (pp. 1068-1073), and Podlesak appealed to the Board of Examiners-in-Chief. (p. 1074.)

This appeal was taken on April 5, 1916, shortly before the acquisition (on April 20, 1916), of the Kane application by plaintiff and the substitution of plaintiff's

counsel for Kane's original attorney in the prosecution of Kane's application. On April 25, 1916, a motion was made on behalf of Kane, supported by an affidavit of plaintiff's counsel, Mr. Williams, dated April 22, 1916, to advance the hearing of the appeal. (pp. 1075-1078.) This motion was denied (p. 1078) and the appeal came on for hearing in regular course, the brief of Podlesak's attorneys in support of the appeal being found at pages 1079-1090.

The Board of Examiners-in-Chief reversed the decision of the Examiner of Interferences, upon the ground that Kane was barred by his laches from making the claims in question, under the decision of the Court of Appeals of the District of Columbia in *Rowntree* v. *Sloan*, 227 O. G., 744, the opinion of the Examiners-in-Chief being found at pages 1091-1092 of the Interference Record.

Kane acquiesced in the decision of the Examiners-in-Chief with respect to the first three counts or claims of the interference, which corresponded to claims appearing in Podlesak's original patent, but appealed to the commissioner in respect to the remaining counts, which corresponded to certain additional claims of the Podlesak reissue. (1092-1093). The commissioner affirmed the decision of the Examiners-in-Chief, but based his decision upon the ground that the claims in question were not readable on Kane's disclosure (1105-1106) whereupon Kane appealed from the decision of the commissioner to the Court of Appeals of the District of Columbia. (p. 1107).

The Court of Appeals affirmed the decision of the commissioner and Examiners-in-Chief in favor of Podlesak, in an opinion found at pages 700-702 of Vol. III. basing their decision *both* upon the ground of Kane's laches in making the claims in question and upon the ground that they were not readable upon his disclosure.

Plaintiff, as owner of the Kane application, carried this interference all of the way to the Court of Appeals in its effort to secure for itself and take away from its licensor

the claims of the Podlesak patent under which it held a license and whose validity it had expressly admitted (Vol. I., 53), and did so in direct violation of its contractual obligation to the Podlesaks, under the license contract Exhibit D, to the effect that the parties to such contract "will aid and assist each other in the prosecution of said applications and the obtaining of patents thereon *and in any interference proceedings relating to their right of priority to said invention* and in any suit or proceeding brought under any of the said patents," etc. (Vol. I., 53). The prosecution of the interference on behalf of Kane was not only a violation of this covenant, but it was a direct attack upon the validity of the claims of the Podlesak patent, under which plaintiff was licensed, and whose validity it had expressly admitted in the license contract, such prosecution of the interference involving, as it did, an assertion of priority of invention of the subject matter of such claims by Kane.

Following the decision of the Court of Appeals, plaintiff's counsel, as Kane's attorney, filed an amendment to Kane's application on June 17, 1918, by which he introduced two new and very much broader claims than any theretofore made at any time by Kane during the eight years his application had been pending in the Patent Office, supporting the amendment with an argument respecting the allowability of the claims, in which reference was made to an interview with the examiner by plaintiff's counsel and plaintiff's general manager, Mr. Brown. (Vol. III., 687-693).

The examiner thereupon rejected the nine claims which had been involved in the Podlesak interference, and allowed the two new claims. Plaintiff's counsel then canceled the nine rejected claims, and the two new claims became claims 7 and 8 of the patent as issued.

These new claims were so very broad and general in their terms that they were readable upon Podlesak's disclosure and dominated the latter and the more limited claims directed to it. They were so broad indeed as perhaps to be read on Kane's drawing although the subject

thereof was not mentioned in the description. They were, however, open to the objection that Kane was not entitled to make the claims because of laches, upon which ground the board of examiners in chief had rejected the claims which Kane had copied from the Podlesak patents, and which was one of the grounds upon which the Court of Appeals had affirmed that rejection. In other words, after the examiners in chief and the Court of Appeals of the District of Columbia had both held that Kane had no right to make the more specific claims of the Podlesak patent, because of laches, the primary examiner allowed to him two very much broader claims directed to the same subject matter, these latter claims having been presented for the first time by an amendment dated June 15, 1918 (687), *five* years (instead of two) after the issue of the original Podlesak patent disclosing their subject matter, *and more than eight years after the filing of Kane's application.* Manifestly, if the board of examiners in chief and the Court of Appeals of the District of Columbia were warranted in law in rejecting the claims which Kane had copied from the Podlesak patent, upon the ground that he was barred by his laches from securing those claims because of a delay of a little more than two years in presenting them after the disclosure of their subject matter in the Podlesak patent, there was much stronger ground and better reason for rejecting the new and broader claims directed to the same subject matter which he presented and secured more than five years after the issue of the Podlesak patent and more than eight years after the filing of his own application; but the Examiner appears to have entirely overlooked this objection to the allowance of the claims.

Kane and his privies not only acquiesced in the decision of the Court of Appeals, instead of following up the interference with a bill in equity (Sec. 4915) as they might have done, but his attorneys (plaintiff's present counsel) expressly conceded the binding and conclusive effect of that decision. Thus, at page 689 of the Vol. III., in the amendment paper in which they presented for the first

time claims 7 and 8 of the Kane patent which we have been considering, they said:

> "The decision of the Court of Appeals awards priority of invention to Podlesak upon the ground that Kane is estopped to make the claims of the Podlesak patent, and the court also expressed its agreement with the conclusion of the Commissioner that the claims of the interference issue are not readable upon Kane's disclosure."

And at page 690:

> "The decision of the Court of Appeals is, of course, binding upon the primary examiner to the effect that Kane is now estopped to make these specific detailed claims of the Podlesak patent because of his delay in so doing.
>
> In so far as any prosecution of this application before the primary examiner is concerned *we promptly concede that we are bound by the estoppel of res adjudicata and by the Court of Appeals.* It is clear, however, that this estoppel does not and cannot run as against the claims now presented.
>
> In the first place the estoppel invoked against Kane is based solely upon the fact that Podlesak claimed and issued a patent claiming the invention involved in the interference long in advance of the date at which Kane first claimed this subject matter."

The reason offered why the "estoppel does not and cannot run as against the claims now presented" was solely that the new claims 7 and 8 were broader and more generic claims than those which Kane had been held to be estopped from making by the decision of the Court of Appeals. They were claims to identically the same subject matter, based upon identically the same disclosure as had been the earlier and rejected claims upon which the interference had been contested, being simply expressed in broader terms. As stated by Kane's attorney, contrasting them with the claims which had been involved in the interference (Vol III., 690):

"The two claims presented herewith are not limited to any of these refinements or details."

In other words, having been held estopped by his laches from making the narrower and more specific claims to the same subject matter which he had copied from Podlesak's patent—claims introduced into his application a little more than two years after the disclosure of their subject matter in the Podlesak patent—he successfuly asserted his right before the examiner to have allowed to him two very much broader claims, directed to the same subject matter and based upon the same identical disclosure, which he introduced into his application *five years* after the disclosure of their subject matter in the Podlesak patent. If his right to the narrower claims was made *res adjudicata* by the decision of the Court of Appeals—if he was estopped from making those claims because of his laches in presenting them—surely the estoppel applied with still greater force to the broader claims presented three years later.*

The rejection of Kane's claims which he copied from the Podlesak patent, upon the ground of his delay in presenting them after their disclosure in the Podlesak patent, was based upon a decision of the Court of Appeals of the District of Columbia in the case of *Rowntree* v. *Sloan*, 227 O. G., 744 (1916), in which it was held that an applicant who failed to present claims for subject matter disclosed and claimed in an issued patent for more than one year after the issue of such patent would be refused allowance of such claims and an interference with the issued patent. This ruling of the Court of Appeals was followed by it in numerous subsequent cases, and became the rule of the Patent Office. It has been recently modi-

*The statements in this amendment paper and argument, to the effect that Kane's application as originally filed contained "broad claims" to the subject matter in question are erroneous and misleading, since neither his original application nor his divisional application, as originally filed, contained any claims whatsoever addressed to the subject matter of claims 7 and 8 of his patent as issued.

fied, however, by the decision of the Supreme Court in the case of *Chapman* v. *Winthroath*, 252 U. S., p. 126.

Claims 7 and 8, thus introduced into Kane's application more than eight years after it was filed in the Patent Office, nearly nine years after their subject matter had been introduced into extensive public use,* and some three years after the present suit was begun—and admittedly and avowedly introduced for the purpose of dominating the construction disclosed in the Podlesak patent under which plaintiff held and now holds a license—are the only claims now in suit.

The situation which has resulted from the proceedings which have been reviewed, therefore, is as follows:

1. Plaintiff has secured, in a second patent, the same identical claims which it had secured four years earlier in its Milton patent, thus prolonging its monopoly under those claims by that length of time.

2. After an unsuccessful attempt to secure, for itself, in like manner, nine claims of the Podlesak patent under which it held a license, and whose validity it had both impliedly and expressly admitted (Vol. I., p. 53)—an effort which it carried, by successive appeals, all of the way to the Court of Appeals of the District of Columbia—it has secured in the Kane patent two claims of very much broader scope than the claims which it sought to take from Podlesak, which additional claims were introduced into Kane's application for the first time more than eight years after the filing of the application (February 2, 1910), nearly nine years after their subject matter had been disclosed in Milton's British patent, and nine years after plaintiff, operating under Milton's invention and his Ameri-

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*The record shows that plaintiff introduced the structure of the Kane and Milton patents into extensive commercial use in the year 1909, and continuously thereafter in increasing numbers, advertising it as the "Milton Magneto," and after the Milton patent issued marking it patented under that patent.

can application and patent, had introduced the claimed invention into extensive public use.*

Having discussed in detail the most important points bearing on the question of *equitable* estoppel in this case, there still remains to be considered briefly as

CHAPTER VI.

Estoppel by Reason of Contractural Relations of the Parties.

It would be unequitable and unconscionable, under the facts and circumstances, to enforce these claims against plaintiff's licensors and their assigns—indeed there seems to be established a *direct* estoppel.

The claims 7 and 8 relate to the same subject matter as the claims of the Podlesak reissued patent covered by license contract (Exhibit D, Vol. I., p. 53), between the Podlesaks and Plaintiff, being merely claims of broader and more general scope. In accepting a license under the Podlesak patents, plaintiff's predecessor not only impliedly recognized the validity of the claims of such patent, but the license contract contained an express recognition of their validity. More than that, the parties to the contract entered into an express agreement and covenant (p. 53) that

> "they would aid and assist each other in the prosecution of said application and the obtaining of patents thereon and in any interference proceedings relating to their right of priority to said invention and in any suit or proceeding under any of said patents," etc.

It was further expressly agreed and understood that the Podlesaks should and did reserve unto themselves the right to make the patented inventions, and it was further expressly agreed and understood that the contract should

*And three years after defendant's devices, against which they are now directed, had been placed on the market,—and nearly that length of time after the present suit was filed.

"extend to and be binding upon the heirs, assigns and legal representatives of the parties of the first part and the successors and assigns of the party of the second part."

As we have seen, notwithstanding these provisions of the license contract, the Webster Company went out and bought up the Kane application. It hoped and endeavored with this to establish a dominating title, covering and controlling the inventions under which it held a license from the Podlesaks. It sought by means of such application to destroy the claims of the Podlesak patent under which it was licensed and whose validity it had both impliedly and expressly recognized; to take such claims away from the Podlesaks and to re-patent them to itself and for its own benefit in the name of Kane; and that, failing in this effort, it finally succeeded in getting through the Patent Office, in disregard and defiance of the decision of the Court of Appeals of the District of Columbia to the effect that it was absolutely barred from making and receiving any claims to the subject matter in question; two broad and generic claims, relating to identically the same subject matter, and covering and dominating the structure of the Podlesak patents under which it was licensed. The respondent here has succeeded to all of the rights of the Podlesaks; and its magnetos which are asserted to infringe the claims of the Kane patent are magnetos employing the structure described and claimed in the Podlesak patents, which respondent is using, and has a full right to use, by virtue of its ownership of the patents and its position as assignee of the rights of the Podlesaks under their license contract with plaintiff.

Can the plaintiff, under these circumstances, and in view of the express provisions of the license contract, be now allowed to assert this outstanding title which it has acquired under the Kane patent (even assuming it to be valid) against the assignee of its licensors with whom it

entered into the agreements and covenants of the license contract?

Had the Podlesaks assigned and transferred their patents to plaintiff's predecessor, instead of merely granting it a license and entering into the agreements of the license contract Exhibit D, and had plaintiff, under such circumstances, granted back to the Podlesaks a license to use the inventions themselves, it would be clear beyond question that the plaintiff could not assert the claims of the Kane patent against them; and if such license to the Podlesaks had been made assignable, as were their rights under the contract Exhibit D, plaintiff would of course be equally precluded from asserting the Kane patent against their assignee.

Is the situation substantially different in this respect, because the Podlesaks *reserved* to themselves and their assigns the right to use the patented inventions, when that reservation is considered in connection with the further agreement and covenant of the parties that they would "aid and assist each other in the prosecution of said applications and the obtaining of patents thereon and in any interference proceedings relating to their right of priority to said inventions, and in any suit or proceedings brought under any of the said patents"? Did not such covenant and agreement, and such reservation to the Podlesaks and their assigns, amount, in legal effect, to an agreement that each party would aid and assist the other in its right to use and enjoy the patented invention in accordance with the terms and provisions of the contract?

Having expressly agreed with the Podlesaks that they should reserve to themselves and their assigns the right to use the patented inventions, and having expressly covenanted and agreed with them that it would aid and assist them in any "proceedings relating to their right of priority to said inventions, and in any suit or proceeding brought under any of the said patents," can the Webster Company be now permitted to employ the Kane patent to de-

stroy the rights which it expressly agreed that the Podlesaks and their assigns should retain—and will a court of equity aid it in such an attempt?

CHAPTER VII.

Divisional Application Not a True Division. No Warrant for Claims 7 and 8.

Claims 7 and 8 of the Kane Patent.

As heretofore stated, these two claims of the Kane patent, which were introduced into the Kane application more than eight years after it was filed and approximately nine years after their subject matter had been in public use, are the only claims now involved in this litigation. They read as follows:

> "7. In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an engine cylinder, spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, *a rigid unitary and integral support upon which all of the aforesaid parts are mounted*, whereby all of said parts may be removed from and returned to their position upon an engine cylinder without disturbing their relations one to another, conductors for carrying electric current from said generating winding to said electrodes, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it.
>
> 8. In an electrical ignition device for internal combustion engines, the combination of a magneto generator comprising rotor and stator and generating winding, a pair of relatively movable make and break spark electrodes adapted to be located within an

engine cylinder, spring means tending normally to hold said rotor in a certain position, mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor, *a supporting member upon the several parts of which all of the aforesaid mechanism is mounted and having a single integral part adapted to be attached to the engine*, whereby all of said mechanism may be removed from the engine by removing said single integral part and may be returned to its position upon the engine with unchanged relations between any and all of the parts of all of said mechanism, thereby insuring the predetermined synchronism and interrelated adjustment of said mechanism when it is replaced upon the engine, and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it."

The italicized portion of each claim describes the only novel element or feature of the claim. Each and all of the other elements were old, both singly and in combination. In other words, the alleged invention covered by each of the claims consisted solely in mounting the described elements upon "a rigid, unitary and integral support" as described in claim 7, or upon "a supporting member * * * having a single integral part adapted to be attached to the engine," as described in claim 8.

There was no statement or intimation, in the specification and claims of the application as originally filed, that this feature of the disclosure constituted any part of the invention sought to be patented—nothing whatever to indicate that it constituted any part of the applicant's invention. On the contrary, some of the statements of the specification were entirely inconsistent with such a suggestion. Thus, for instance, it was stated in the original specification (Vol. II., 506), that the invention sought to be patented was applicable alike *to magneto generators of the oscillating type and those of the rotary type*, whereas the subject matter of claims 7 and 8 could not possibly

have any application to a magneto generator of the rotary type (employing a rotary armature) since such magnetos are always located at a point adjacent the engine shaft and remote from the ignitor plug and electrodes, as shown, for instance, in the illustrations of such magneto found at pages 581-587 of Vol. II.

Nor did the divisional application, as *originally filed*, contain any statement or intimation whatsoever that the subject matter of claims 7 and 8 constituted any part of the applicant's invention that was sought to be patented. Indeed, the specification as *subsequently amended*, and as it appears in the patent itself, may be read and studied with care without discovering the slightest intimation that the subject matter of those claims constitutes any part of the invention intended to be patented.

Not only so, but the disclosure of the subject matter of the claims in the drawings of the patent and its description in the specification are very meagre, and of doubtful sufficiency to support the claims. Let us consider this latter point.

The disclosure of the drawings is found in Figures 1 and 2, and the description in the specifications, in part, at lines 43-75 on page 1 (Vol. III., 933), read as follows:

> "In the drawing, an explosive engine 1, fragments of which are shown, is provided with a suitable opening for the ignition points of a make-and-break system, and around this opening, on the outer side of the cylinder wall, is an ignition block 8, provided with an extension 9 extending through said opening into the cylinder. At the inner end of the extension 9 is carried the fixed contact 10 of the make-and-break system. The electrode 10 is mounted on block 8 and insulated therefrom in the usual manner, such insulation not being shown. At the outer end of the contact member 10 is secured a conducter wire 11, between nuts 12 and 13.
>
> On block 8 is an arm 14 having a bearing member 15 at its outer end. In the bearing member is journaled a shaft 16, which carries the armature or

inductor 17. The inductor 17 rotates between the field cores 18 and 19. The cores 18 and 19 are provided with suitable electrical windings and formed on the pole pieces 20 and 21, and the latter are joined by fixed magnets 22 and 23. The pole pieces 20 and 21 are carried on supporting block 25 which is secured by set screw 25a to the bearing member or bracket on or in which the magneto generator is mounted, thus rendering the magneto generator proper detachable from its firm supporting base, shelf or bracket formed integrally with ignition block or plug 8 as described."

As will be understood from the foregoing, the ignitor block or plug, 8, which fits against the cylinder wall 1 and has the extension 9 projecting through the opening therein, is provided with an arm 14 which projects to the right from the block and carries a forwardly extending hub or bearing member 15 in which is journaled the shaft 16 which carries the armature or inductor. The shaft 16 is not shown in Figure 1, and appears only in section in Fig. 2, but as it is described as carrying the armature or inductor, and the latter is described as rotating between the field cores 18 and 19, it of course follows that the shaft projects outwardly (downwardly in Fig. 1), beyond the bearing in which it is journaled, in order that it may carry the armature or inductor upon or near its outer end, between the field cores 18 and 19. The flaring block 25 (shown only in Fig. 1 and there very incompletely) which is said to carry the pole pieces 20 and 21, is described as being secured to the bearing member 15 by the set screw 25a. This would indicate that the bearing 15 was continuous from its supporting arm 14 to its front end, to which the block 25 is secured, but this is not the fact (at least of the portion shown in Fig. 1) for there is a yoke member described as being secured upon the shaft 16 at a point intermediate the ends of the bearing 15, so that the latter would manifestly have to be cut away or provided with a gap to permit such yoke member to be secured to the shaft journaled in the bearing. This yoke member is shown

in Fig. 2 (being hidden by parts above it in Fig. 1) and is described at the bottom of the second column on page 1 of the specifications as follows:

> "Secured on the shaft 16 is a yoke member 30, having two arms extending in opposite directions from shaft 16, with one of the arms 30 positioned at one end of anvil 29, and adapted, upon oscillation of shaft 16, to cause the movement of the anvil to open the contacts 26-10, as will be described later. The arms of member 30 are provided with lateral extensions which are connected to tension springs 31 and 32, said springs being secured at their outer ends to brackets 33 and 34 on pole pieces 20 and 21, so that the tension of the springs 31 and 32 normally maintains the arm member 30 in a position so that one of its arms is in striking relation to the anvil 29, the position of the anvil varying obviously with its described adjustment. On the member 30 is an actuating arm 35 adapted to be engaged by plunger 36. The plunger 36 is actuated from the crank shaft of the engine, not shown."

Now, in order that the yoke member 30 may be "secured on the shaft 16" as described, it is manifest that the bearing member 15 in which the shaft 16 is journaled must be cut away, or have a gap provided in it, about midway of its length to permit the yoke member to be secured to the shaft 16 in the position shown in Fig. 1 where the oppositely extending arms of the yoke member are largely hidden by the parts above them but where its "lateral extensions," to which the springs 31 and 32 are secured, are clearly shown, as well as the upper end of the "actuating arm 35" which is engaged by the plunger 36. But if the bearing member 15 is to be thus cut away or provided with a gap, for the accommodation of the yoke member 30, the question arises as to what then supports the outer end of the bearing member (its lower end in Fig. 1) to which the block 25 which carries the pole pieces 20 and 21 of the field cores is described as being secured by the set screw

25a. The specification of the patent offers no explanation whatsoever, and no support for such portion of the bearing member 15 is disclosed in the drawings, unless it be assumed that it is supported in some undisclosed way from the square arm or bar shown in cross section immediately below the shaft 16 in Fig. 2 and marked with the reference numeral 15. This square arm or bar is not mentioned in the specifications, and there is nothing in the drawings to show what it may be, other than the application of the reference numeral 15 to it, which indicates that it forms some part of the "bearing member" designated by that numeral in the specification. The view in Fig. 2 purports to be "a section taken on the line 2-2 of Fig. 1," but why a cross section taken on that line or in that plane should show the member 15 in cross section does not appear, so that the actual construction, and the entire means for supporting the outer end of the bearing 15 and all of the parts carried by it (the block 25, the pole pieces, field cores, permanent magnets, etc.) is left to conjecture, as is likewise the shape and character of the block 25, the method of attaching the pole pieces and field cores to it, and the manner in which the block itself is or could be secured to the bearing member 15 by a *set screw*, as described.*

The only portion of the specification of the patent as actually issued which even calls attention to the fact that the magneto generator and associated parts are mounted on "a rigid unitary and integral support," as called for in claim 7, or upon "a supporting member having a single integral part adapted to be attached to the engine," as specified in claim 8, is the sentence beginning with the end of line 67 and ending with line 75 on page 1, *and this was new matter introduced into the specification by amendment nearly six years after the filing of Kane's original*

*The cross-sectional view Fig. 2 was evidently not taken throughout on the line or in the plane 2-2 of Fig. 1, since in that event the block 25 would have been shown in section or the end of the tubular bearing for the shaft 16 in elevation, or both.

application (October 18, 1915, Vol. III., 675) as a basis for the claims copied from the Podlesak patents which plaintiff unsuccessfuly sought to take away from its licensor in the manner heretofore described. Kane's original specification contained no description whatever of the manner of mounting and supporting the block 25 carrying the pole pieces and field cores of the magneto, unless it is to be found in the language contained in the last paragraph on page 506 of the Vol. II. and reading as follows:

> "The laminated cores 18, 19, may be wound in the manner common to this type, one end of the winding indicated at 24 being connected to the supporting block 25 in contact with sleeve 15 and secured thereto by set screw 25a which completes the circuit to the bearing block 8 and the movable electrode 26."

There was no other reference to the block 25 in the entire specification, excepting that on the following page (507) reading:

> "To the supporting block 25 is secured the laminated field members 20, 21 which carry the wound cores 18, 19."

In the specification of the divisional application (upon which the patent in suit issued) as originally filed, the description was as follows (Vol. III., 626):

> "On block 8 is an arm 14 having a bearing member 15 at its outer end. In the bearing member is journaled a shaft 16, which carries the armature on inductor 17. The inductor 17 rotates between the field-cores 18 and 19. The cores 18 and 19 are provided with suitable electrical windings and are formed on the pole pieces 20 and 21, and the latter are joined by fixed magnets 22 and 23. The pole pieces 20 and 21 *are carried on an extension* 35 *formed on the bearing member* 15.
>
> One end of the conductor 11 connects to or is a part of the winding on pole-core 19, and the latter is

> connected to the winding on pole-core 18 in the usual manner, and is not specifically shown. The other end 24 of the winding on pole-core 18 is secured to the extension 25 by a set-screw 25a to ground the circuit in the framework of the magneto."

As will be noted from the foregoing, the pole-pieces 20 and 21 were originally described as being "carried on an extension 35 formed on the bearing member 15." (The reference numeral 35 was evidently inadvertently used here for 25). The draftsman of the specification apparently had nothing before him but the Patent Office drawing as it appears in the patent, from which he concluded (as he might well have done) that the part 25 shown in Fig. 1 (and nowhere else) was in fact an extension formed on the bearing member 15 in which the shaft 16 was journaled. Later on, this description was changed, by the amendment heretofore referred to, to that found in the specification of the patent as issued, in which it is stated that

> "The pole-pieces 20 and 21 are carried on supporting block 25 which is secured by set-screw 25a to the bearing member or bracket on or in which the magneto generator is mounted, thus rendering the magneto to generator proper detachable from its firm supporting base, shelf or bracket formed integrally with ignition block or plug 8 as described."

But, as heretofore pointed out, even this amended description affords no disclosure whatever of the means for supporting the portion of the bearing member 15 upon which the block 25 "is secured by set-screw 25a," or any disclosure of the form or character of the block, or the manner in which the pole-pieces and field cores are supported and carried by it.

Moreover, the concluding portion of the quoted statement, to the effect that the result of the incompletely described arrangement is the "rendering the magneto generator proper detachable from its firm supporting base, shelf

or bracket formed integrally with ignition block or plug 8 as described," is inaccurate, since under the disclosed construction the magneto generator proper or as a whole is not rendered detachable from its support (the bearing member 15), for the inductor or armatude constituting a vital part of the generator cannot be removed with the pole-pieces and field-core and magnets without in some manner disconnecting or loosening the yoke 30 which is secured to such shaft in the gap in the tubular bearing 15. In assembling the parts the only way this yoke member can be gotten in place and secured to the shaft is to insert it in the gap in the bearing and then pass the armature shaft 16 lengthwise through the bearing and through the hub of the yoke-member, and then firmly secure the latter to the shaft by a pin or set-screw or some other means. Until the yoke-member, so secured to the shaft, is released, it is of course impossible to withdraw the shaft from its bearing, so that the magneto generator as a whole connot be detached from its support by loosening the set-screw 25a, as contemplated by the description in the specification. Moreover, even when the armature shaft is released, so that it can be withdrawn from its bearing, the latter remains an integral part of the "supporting base, shelf or bracket formed integrally with ignition block or plug."

This entire amendment, which was introduced into the application for the purpose of laying a foundation for the copying of Podlesak's claims, was a misfit in both terms and substance. It was a misfit in terms, because there was nothing in Kane's disclosure in the nature of a "shelf or bracket," as there was in Podlesak's, in whose patent those terms were used as aptly descriptive of his disclosure: and it was a misfit in substance, for the reason that in Podlesak's construction the magneto was a self-contained structure mounted upon the supporting shelf or bracket carried by the ignitor plug and bodily removable therefrom by simply loosening the bolts by which it was secured in place (see Fig. 2 of Podlesak patent Reissue 13,878), whereas in the Kane construction, as has been explained, the magneto was

not bodily removable from its support, but had to be removed piecemeal, and leaving the bearings for the armature shaft on the ignitor block or plug of which they formed an integral part. The entire amendment, to both specification and claims, was simply a strained effort on Kane's part to steal Podlesak's claims, without any just foundation for them, as the Board of Examiners-in-Chief and the Court of Appeals subsequently held. It may be noted, in this connection, that plaintiff does not follow Kane's construction, but Podlesak's, in the magnetos which it claims to be manufacturing under the Kane patent, having discontinued the use of the construction disclosed in Kane's patent in 1912 and substituted that of the Podlesak patent. (Vol. I., p. 411; Plaintiff's Exhibit No. 43).

Whether or not, in view of the foregoing, the specification and drawing of the Kane patent can be said to afford a sufficient disclosure of the subject matter of claims 7 and 8 of the patent—claims whose sole novelty consists in the mounting of all of the described parts upon "a rigid unitary and integral support," or upon "a supporting member having a single integral part adapted to be attached to the engine"—it is in any event manifest, from the meagerness of the disclosure, and the history of the application, that the subject matter of the claims constituted no part of the invention which Mr. Kane sought and intended to patent at the time his application was prepared and filed. He either did not consider it *his* invention, or he did not consider it an invention at all. Indeed, Mr. Kane expressly so testified. As hereinafter more fully explained in connection with our discussion of Mr. Kane's claim to having originated the construction disclosed in his patent, as against the contrary claim of Mr. Milton, the only thing which Mr. Kane claimed to have invented, when he disclosed his alleged invention to the patent solicitor, and the only thing which he sought to cover by his proposed patent, was an automatic cut-out which would render the magneto inoperative when the engine exceeded a certain speed. This is the thing described and claimed in Mr. Kane's patent, No.

1,204,573, which was issued upon his original application, and which is incidentally and in part shown in the drawings of his patent in suit. Thus, on page 275, Vol. I. of the record, testifying on cross-examination respecting his disclosure of his invention to his patent solicitor, Mr. Sprinkle, Mr. Kane said:

"Q. Now, what did you tell him at that time was the principal and most important thing which you wanted patented, Mr. Kane? I am talking about your conversation with Mr. Sprinkle, now. What did you tell him was the most important feature you wanted covered by the patent?

A. I told him I thought the big thing about the whole apparatus was how nicely that spark would cut out.

Q. 'Cut-out,' what do you mean by that?

A. The magneto become inoperative.

Q. You told him that was the nicest thing, did you?

A. Yes, sir. I also expressed my opinion. I thought that was a big invention."

And further, at page 277:

"Now, as I understand it, Mr. Kane, you told Mr. Sprinkle that the most important feature of your invention, and that which you wanted him by all means to patent, was the means for automatically cutting out the spark—that feature, is that right?

A. That was one of the things, yes, sir.

Q. Well, now did you tell him that that was the most important thing?

A. I do not know whether I told him, or whether he seized upon that himself. I could not answer that.

Q. I thought that a moment ago you told me that that is just what you told him. Didn't you?

A. I told him I thought that that was the nicest and most ingenious thing in it.

Q. Now, what did you tell him about the means by which the magneto plug was to be attached to the cylinder?

A. Well, outside of telling him that by doing that we had a means of securely fastening the magneto to the cylinder, and also a means of cutting out a lot of intermediate and useless mechanism, I do not know as I told him very much.

Q. You did not consider it of very importance; is that right?

A. It seemed to me a matter more of design than of importance—invention.

Q. Is that what you told him?

A. Yes, sir.

Q. And you told him that you thought that it was not an invention, and was a mere matter of design? You told that to Mr. Sprinkle, did you, when you went to him to get a patent?

A. I told him it was a good means and preferred means of fastening the magneto on the engine.

Q. Well, I ask you if you told him that you thought it was a mere matter of design, and not an invention.

A. I possibly did, yes."

And again, at the bottom of page 281:

"A. I told Mr. Sprinkle that combining this plug and the casting on it *I did not think there was any invention in that*. In Mr. Milton's patent, if I remember rightly, it deals with a trip finger in there, and a cam surface, and that sort of stuff."

Mr. Webster, plaintiff's president, and a man of long experience in patent matters, had also expressed the opinion that there was nothing patentable in it. (Vol. I., pp. 255, 256, 273, 308).

Plaintiff has introduced voluminous proofs into the present record, for the purpose of showing that this mounting of the magneto upon the ignitor plug was really the great feature of Mr. Kane's alleged invention, that it solved a difficult problem which had been confronting plaintiff and its customer, the International Harvester Company, and one upon which the minds of many people

interested in the subject had been concentrated; but the specification and drawings of the patent itself, and the history of the application and the testimony of Mr. Kane, show that it was not considered a patentable invention by anyone, with the result that it was not only incompletely and imperfectly disclosed in the drawings and specification of the application, *but no claim in any manner directed to its subject matter was presented.*

The subject matter of present claims 7 and 8 manifestly did not embody anything patentable, according to the views of either the inventor or his patent solicitor, or of plaintiff company for whose use the construction embodying the alleged invention was designed.

CHAPTER VIII.

Chapman-Winthroath, 252 U. S., p. 126.

While, as heretofore pointed out, the Court of Appeals of the Seventh Circuit, in deciding this case, did not make the decision of the Court in *Chapman* v. *Winthroath*, the controlling factor, but decided for defendant appellee on other grounds, as has been pointed out in the decision above quoted on page 6, yet as the writ of certiorari was granted presumably because of the statements made in brief for petitioner as to the misapplication of that doctrine by the Court of Appeals, it becomes necessary to consider that case.

Briefly, the facts in that case were, as follows: The Chapmans had filed an original application on March 10, 1909. While it remained pending, Winthroath, on December 2, 1912, filed an application relating to the same subject-matter, upon which a patent issued to him on November 25th, 1913. On June 6th, 1915, the Chapmans filed a division of their original application, in which they presented claims from the Winthroath patent. An interference was declared between this divisional application and

the Winthroath patent, which was prosecuted by successive appeals to the Court of Appeals of the District of Columbia. That court held in accordance with the previous ruling in *Rowntree* v. *Sloan*, App. D. C. 45, p. 207, that the Chapmans were barred from receiving the claims in controversy by the fact that they had not prosecuted them within one year after the date of issue of the Winthroath patent—basing its decision, as stated by the Supreme Court, upon the ground that the divisional application should be regarded substantially as an amendment to the original application and that it would be inequitable to permit a longer time for filing it than the one year allowed by the statute (Section 4894), for the further prosecution of a pending application after official action thereon. In other words, it applied the doctrine of equitable estoppel.

The court reversed the decision of the Court of Appeals of the District of Columbia, but based its reversal upon the sole and express ground that less than *two* years had elapsed between the issue of the Winthroath patent and the filing of the divisional Chapman application.

In its consideration and construction of Section 4886 of the Revised Statutes, which it referred to as

> "fundamental to all others in our patent laws"

the court drew no distinction whatever between original and divisional applications. Thus, starting with Section 4886 as a basis, and referring to it, as above, the court goes on to say that the prior patent may not be a bar to the grant of a subsequent patent on the same invention to an earlier inventor, *provided*

> "that his application is filed not more than two years after the date of the conflicting patent. The applicant may not be able to know that he was the first inventor, but the statute gives him two years in which to claim that he was and secure the institution of an interference proceeding."

The Court then refers to the "two years" provision in Sections 4887, 4897 and 4920, and also to the judicial

two years rule in reissue cases, and in conclusion, states that the Chapmans were within their legal rights in filing their divisional application *at any time within two years after the publication of the Winthroath patent.*

If it is not the inevitable deduction from the reasoning of the Court—if it did not in fact mean to hold that prior patenting or publication—i. e., the setting up of an adverse claim or right, of which the applicant had notice —more than two years prior to the filing of a divisional application will constitute a bar to such application, then there was no reason for its extended discussion of the two years' rule in respect to any defenses.

It might have disposed of the whole controversy in a word, to the effect that the Chapman divisional application was entitled to the benefit of the date of their original application for all purposes, and that the Winthroath patent could not, therefore, constitute a bar to it on any ground. It did not pursue such a simple course, but, on the contrary, in a carefully and clearly reasoned out opinion, held that the Winthroath patent was not a bar because and *solely* because the divisional application was filed *within two years after* the issue of the Winthroath patent.

From the language used by the Court, it may well be argued and has been so held by at least one Federal Judge— (Northern District of New York—*American Laundry Co.* v. *Prosperity Co., Inc.*), that, under this decision all the statutory bars, including that of two years prior public use, apply to divisional applications.

That this view was held by the Court of Appeals of the Seventh Circuit is the principal ground urged by the petitioner in his application for writ of certiorari.

No such ruling was made by the Court of Appeals of the Seventh Circuit in this case. It held the Chapman-Winthroath case applicable to the case because of the issuance of the intervening patent more than two years prior to the filing of the Kane divisional case, but based the decision

mainly on the gross inequities practiced by the patentee, all of which will be referred to hereinafter.

While perhaps the language of this Court in the Chapman-Winthroath case affords a *foundation* for the contention that its intent was to hold rigidly the statutory bars against a divisional as well as the parent case (for no where in the statutes are divisional applications mentioned except in the reissue statute (Section 4916), in which authority is given the Commissioner to reissue a patent in divisions), it is perfectly true that the doctrine so extended could work many hardships, as, for example, where a requirement for division is not made by the Patent Office until the invention has been in public use two years, or where, by the prosecution of a case in the Patent Office, a division becomes necessary. Furthermore, such a holding as to the meaning of the language would, in effect, amount to a reversal of the decisions of this Court and of other courts where divisional applications have been held to have all the benefits of the parent case on the question of priority.

That the Court did not mean its language to be thus construed would seem to be indicated by the following quotation from the decision:

> "To this we must add that not only have later or *divisional* applications not been dealt with in a hostile spirit by the courts, but, on the contrary, designed as they are to secure the patent to the first discoverer, they have been favored to the extent that where an invention clearly disclosed in an application, as in this case, is not claimed therein but is subsequently claimed in another application, the original will be deemed a constructive reduction of the invention to practice and *the later one will be given the filing date of the earlier, with all of its priority of right.* *Smith & Griggs Manufacturing Co.* v. *Sprague*, 123 U. S. 249, 250; *Von Recklinghausen* v. *Dempster*, 34 App. D. C., 474, 476, 477; 154 O. G., 252."

We believe the true intent of the decision is to apply the doctrine of *equitable estoppel* against the patentee who

delays more than two years after the issue of the intervening patent, or assertion of an adverse right; the two years limit being set by analogy to the statutes just as the two years rule in reissue cases was fixed by analogy to the Statutes. That this is the real doctrine is shown by the attitude of the Court of Appeals of the District of Columbia in the decisions rendered by that tribunal following the decision of this court in *Chapman* v. *Winthroath*. Great weight should be given to these opinions because, to use a plain expression, said Court is the tribunal which recently has set this "ball a-rolling."

In *Wells* v. *Honigmann*, 267 Fed. 743, it was held that Wells was not *estopped* by over one year's laches, to copy the claims of Honigmann's patent in a renewal application filed while Wells' original application stood forfeited for non-payment of final fee.

In *Replogle* v. *Kirby*, 269 Fed. 862, no divisional application was involved, the sole question being whether Replogle was *estopped* by reason of 15 months' laches after the issue of Noguchi's patent from copying the claims by amendment into his original application. The Court held that under the Chapman decision he was not *estopped*.

In *Ransdall* v. *Jahns*, 273 Fed. 365, it was held that Jahns was not *estopped* to copy Ransdall's claim twenty months after Ransdall's patent issued.

In *DeFerranti* v. *Harmatta*, 273 Fed. 357, it was held that DeFarranti was *estopped* to copy Rietzel's claims more than two years after Rietzel's patent issued and therefore he was equally estopped as against Harmatta, who had been held entitled to copy Rietzel's claims as the prior inventor.

In *Ex parte Nathan*, 279 Fed. 925, it was held that Nathan was *estopped* to copy the claims of an Anderson patent more than two years after Anderson's patent issued, even though Nathan had prior to the Anderson patent's issuance attempted to obtain similar claims for himself, failed and abandoned the attempt.

In *Wahl* v. *Main*, 280 Fed. 974, Wahl in his original application disclosed but did not claim the counts of the interferences. Four and a half years after the issuance of Main's patent, he copied Main's claims. No excuse was offered for his delay. It was held Wahl was *estopped* to copy Main's claims.

These decisions are all based on the rule of *estoppel* to copy after two years the claims of an issued patent—that is, estoppel against delay in moving to overcome an asserted adverse right. Whether they were copied in an old *original* application or a new *divisional* application is immaterial. In other words, in reaching the conclusion arrived at, the Supreme Court held that, under the statutes, Chapman had a right to file an original application embodying the same claims at any time within two years after the issue of Winthroath's patent; that the Court had always been favorable to divisional applications, as quoted above, and certainly should not hold Chapman estopped by laches to make the claims in a divisional application based on an earlier original application, when, under the strict language of the statute, he would have been entitled to make the claims in a newly filed original application. He should not be worse off because he had a prior application pending than if he had made a fresh start.

This is entirely different from a case where a divisional case is filed more than two years after the grant of the intervening patent and where the adverse right has been set up and has been in existence for the two years.

It is perfectly clear from the decision of the Supreme Court that, had the Chapman case not been filed until more than two years after the Winthroath patent, he would have been held estopped from obtaining a valid patent upon the subject matter just as an original application filed at that time would have been barred by the two years prior printed publication or patent, except that in the latter instance the bar would have been *statutory*, whereas in the former instance it would have been equitable estoppel with

the two years period prescribed, by analogy to the two years statutes.

The present case is, of course, much stronger because not only were the intervening rights set up more than two years prior to the filing of the divisional application, but the original application, (as appears from the testimony by Kane himself), was not intended to include the "bracket construction" for which claims were not introduced until after the divisional application was filed.

Of the original twenty-four claims which were filed with the original application, there does not appear to be one which is directed to this subject matter; and, if there were; on February 12, 1912, every claim was erased except the two for the automatic cut out, which appeared in the patent, and even when, in November, 1914, claims were added to the Kane application for the purpose of provoking an interference with Milton, claims for the bracket feature (the subject of claims 7 and 8) were not included. In fact, they were not included when the divisional application was filed (January, 1915), but were added later for the purpose of interference with the Podlesak patent, more than two years after the issuance of the Podlesak patent, and when so first introduced were rejected by the Examiner as not being warranted by the disclosure of either the original or divisional application and not finally admitted until October, 1915. (See Chapter on *Kane* v. *Podlesak*).

Applying the rule of equitable estoppel and interpreting the language of this court in the Chapman-Winthroath case according to the facts of that case, we find that this court held that, in spite of the intervening adverse right (Patent of Winthroath) Chapman having filed his divisional application with the claims of that patent before two years had expired, could not be barred thereby.

Thus we find as to the Chapman-Winthroath case—

1. That there was no question respecting the adequate and complete disclosure of the invention in both the original and divisional cases;

2. The divisional application, as and when originally filed contained the claims in controversy—claims copied from the issued patent with which an interference was sought.

3. The divisional was filed within two years from the issue of the intervening patent.

In the present case—

1. The disclosure of the subject-matter of the claims was so inadequate and incomplete in both the *original and divisional* application as to raise grave question as to whether the original disclosure was sufficient to support the claims even when after long delay they were inserted, and requiring, in any event, amendments and additions to both specification and drawings to lay foundation for them.

2. The *divisional* application when filed contained no claims in any manner directed to the subject-matter of the principal claims subsequently copied from the Podlesak patent and introduced into said divisional application by an amendment filed more than two years after the Podlesak patent, disclosing and claiming said subject-matter, issued.

3. If it is contended that the parent application of Kane *did* show an attempt to claim the subject matter in suit, he abandoned it by striking out, on February 12, 1912, any claim which in any manner might suggest the invention in controversy prosecuting his case on another invention and not restoring any claims for any semblance of the feature in dispute for more than two years, viz: until *April* 1915, although he had in November 1914 put in claims to cover *one* intervening patent (Milton) and had filed his divisional application *for that purpose alone* in *January* 1915.

4. His own testimony shows that he didn't have the invention in dispute in his parent application—

> "Q. What? Didn't Mr. Webster ask you to help him out in connection with the means of fastening the magneto and the plug to the engine?
>
> A. No, sir, he did not.

Q. He didn't discuss that at all with you prior to the time that you filed your application?

A. He did prior to the time we filed the application.

Q. Well, when was it he discussed that with you?

A. Discussed that with me when I showed him the drawing.

Q. Mr. Kane, is there anything on that drawing—the first one that you had—showing any means of regulating or determining what you call the cut-out of the spark?

A. No, sir, there is not.

* * * * *

Q. Now, what did you tell him about the means by which the magneto and plug were to be attached to the cylinder?

A. Well, outside of telling him that by doing that we had a means of securely fastening the magneto to the cylinder, and also a means of cutting out a lot of intermediate and useless mechanism, I do not know as I told him very much.

Q. You did not consider it of very much importance; is that right?

A. It seemed to me a matter more of design than importance—invention.

Q. Is that what you told him?

A. Yes, sir.

Q. And you told him that you thought that it was not an invention, and was a mere matter of design? You told that to Mr. Sprinkle, did you, when you went to him to get a patent?

A. I told him it was a good means and preferred means of fastening the magneto on to the engine.

Q. Well, I asked you if you told him that you thought it was a mere matter of design, and not an invention.

A. I possibly did, yes." (Vol. I., p. 275).

And again on page 281:

"A. I told Mr. Sprinkle (his attorney) that combining this plug and the cutting out *I did not think there was any invention in that.* In Mr. Milton's patent if I remember it deals with a trip finger in there and a cam surface, and that sort of stuff."

5. Adverse intervening rights had been asserted more than two years before the *filing* of the divisional case, and more than five years before the filing of claims 7 and 8 sued on.

A brief review of the instant case shows how emphatically the doctrine of equitable estoppel set forth in *Chapman* v. *Winthroath* applies here. Kane's original application was filed February 2, 1910, and he said he didn't say anything about *this* invention to his attorney, except that he had no invention. His divisional application was filed January 14th, 1915.

The entire subject matter disclosed in both applications had been in public use and on sale *for more than five years* prior to the filing of his divisional application—since the summer of 1909—the first magnetos embodying such subject matter having been built in April and May, 1909, and tested out and demonstrated at that time, and having gone into commercial production shortly afterward.

The application for Milton's British patent, disclosing the subject matter of all of the claims of the Kane patent in suit, was filed October 28, 1909 (Ex. Bk. 397-403), and the application was allowed and the patent sealed and became effective a few months later, so that the subject matter of the claims of the Kane patent was also patented and disclosed in a patent and printed publication, in and by Milton's British patent, five years prior to the filing of Kane's divisional application.

The only claims contained in Kane's divisional application as originally filed were the six claims copied from Milton's American patent (No. 1,096,048), which had been applied for on October 28, 1910, and issued May 12, 1914. It contained no claims in any manner directed to or toward the subject matter of the Podlesak "bracket" claims subsequently introduced into Kane's application, or the subject matter of claims 7 and 8 of Kane's patent, which were introduced several years later. Nor was there anything in the specification of the divisional application as origin-

ally filed to indicate that such subject-matter constituted any part of the invention intended to be patented.

The first claims relating in any way to the subject-matter of the Podlesak claims referred to, or to the subject matter of claims 7 and 8 of the patent as issued, were introduced by an amendment filed April 17, 1915, *more than two years* after the issue of the Podlesak patent, No. 1,055,076 of March 4, 1913, disclosing the same subject matter and containing some of the same claims, *and nearly six years* after the subject matter of the claims had been *disclosed* in Milton's British patent and introduced into public use and placed on sale in this country.

Claims 7 and 8 of the Kane patent were introduced by an amendment filed June 17, 1918. (Vol. III., 687). These claims were directed to the same subject matter that was disclosed in the Podlesak patent of March 4, 1913, and they were based upon the identical construction which had been in public use and on sale in this country since the middle of the year 1909, and which was disclosed in and covered by Milton's British patent of that year. Their subject matter had, therefore, been patented and described in a printed publication more than eight years earlier, in the Milton British patent and more than five years earlier in the Podlesak patent, and had been in public use and on sale by plaintiff itself for practically nine years, by defendant itself for three years, acting in accordance with its rights under the Podlesak patents, under which plaintiff petitioner also had licensed rights.

The practice of many concerns to hold indefinitely in the Patent Office applications including various features of invention, and using these applications as a basis for the introduction of new claims into the application long after they have been filed, or by so-called divisions, for the purpose of covering developments of the art, has resulted in shameful abuses, of which the instant case would be a striking example if the Kane patent were held valid. It certainly seems intolerable that an applicant can introduce broad claims to certain subject-matter for the first time,

years after his application has been filed, years after the subject-matter of the claims has been disclosed in printed publications and patents, and has gone into public use, and to be able to secure such claims and have them sustained. The abuses which have grown up under the practice above mentioned are as flagrant as those which grew up under the old reissue practice, and this court did not hesitate to cure that practice by judicial application of the two years rules to such cases. Such practice has been condemned by many of the courts and commented on. Only recently Judge Hough, in deciding a case where the original application had after a long lapse of time been revamped and modified to include the development of the art, stated

> "that such things are permitted is a disgrace to our patent system."
>
> (Opinion not reported but affirmation in 290 Fed. Rep., p. 184).

Because an inventor under these circumstances has been held to be within statutory rights, these abuses have been allowed to go on, the only redress being that the courts have in many cases, gone out of their way to put a narrow meaning upon the claims so as to be able to hold non-infringement.

In this instant cause, however, while all these abuses would be given a clean bill of health, if this Kane patent were sustained, it fortunately happens that the facts in the case are such as to warrant the application of the doctrine of equitable estoppel, and that, too, without any straining of the principles of that doctrine.

The two years statutory bar to the grant of a patent and its consequent invalidity, if granted, are based on the statutes 4886, 4887 and 4920, and are two years public use prior to the filing of the application, or a two years prior patent or printed publication—that is, "patented or de-

scribed in a printed publication in this or any foreign country."

In reissue cases another two years bar was created by this court, not as a statutory bar but as an *estoppel*, with two years as the period. The purpose was to put a stop to the practice in vogue of reissuing a patent with claims added for the sole purpose of covering later developments in the art, many of these reissue applications being based on chimerical contention that obscure drawings and insufficient descriptive matter established a basis for such claims.

The present erroneous contention of plaintiff is that the decision of the Court of Appeals in the present case is a ruling that all divisional cases are bound by the same statutory bars as an original application, and is, therefore, contrary to the rulings of this court in cases such as *Smith & Griggs Mfg. Co.* v. *Sprague*, 123 U. S. 249, and others.

In the cases cited the division was a real division carved out of the original, with full disclosure in the original; and there was no adverse right asserted between the date of the patent application and the filing of the divisional, and two years old at the time of filing the divisional case.

Again, in the particular matter of the *prior patent and publication* two year rule, there is every reason for applying the rule with the greatest strictness if the applicant of a pending application with divisible subject-matter therein on knowledge of the issuance of a patent conflicting with that divisible subject-matter fails to protect his rights within two years from the date of that patent. He should lose his rights and the bars should be strictly enforced against him. The reason for this is perfectly obvious.

The patent monopoly is a beneficial monopoly. This reward (a monopoly for a term of years), is given the inventor who, instead of keeping his invention a secret, places it before the public in such a way that, at the end of a restricted term, the public is free to use it. In other words, the object is to open the invention to the unlimited use of

the public in the shortest possible time. Therefore, the statutory two years bars were created to protect the public and to impose a duty on the inventor. The purpose is entirely thwarted if an inventor can file an application, keep it in the office indefinitely and at any time—two years, five years or ten years—after he knows that intervening patents have issued, or that adverse rights have been set up, still be able to file divisional applications, to destroy those intervening patents, and not only to destroy those patents but to prolong his own monopoly and take away from the public the right to enjoy the use of that intervening patent at the end of its seventeen years monopoly. Surely the two years bar by estoppel should apply to such a case—just as to the parent case.

It cannot be gainsaid that it is applicable in a case like this, where, as we have shown, the alleged division was not a true division and there was no attempt in the parent case to claim the invention, and no descriptive matter to warrant it, but where, on the contrary, there is express testimony by the inventor and the President of the plaintiff corporation, the applicant's employer and personal friend, and the one who was offered the control of it, that he made no claim to such an invention and didn't consider there was any invention in that which after eight years from the filing of the present case they consider a broad invention, to be utilized by them to prolong their monopoly, and to destroy the contractural relations existing between themselves and their licensors and the latter's assigns, and that, too, in express violation of one of the provisions of that contract "to aid and assist," etc.

Consideration should be given to the other mentioned inequities practiced by plaintiff. We think the general doctrine as to equitable estoppel arising from the grant of an intermediate two year old patent is well stated by the Court of Appeals of the District of Columbia, in re Josephine F. Fritts, Administratrix of the estate of Charles E. Fritts, 45 Appeals, D. C., page 211, which was the first de-

cision of the Court of Appeals of the District along the lines of the doctrine thereafter announced by them in *Rowntree* v. *Sloan*, *Winthroath* v. *Chapman*, etc. In that case, the Court said:

> "It was his (inventor's) duty, within a reasonable time after the issuance of those (intervening) patents, to assert his claims thereto, to the end that an interference might be declared and the issue of priority determined. By failing to assert such claims, he must be held to have abandoned them.
>
> "Monopolies are inherently obnoxious, and it is solely because of ultimate benefit to the public that a conditional form of monopoly is permitted an inventor. When the element of diligence or good faith in an applicant is lacking, there is no valid reason for such a construction of the patent laws as would effect an extension of the limited monopoly granted upon prescribed conditions which include those very elements. Inasmuch as even diligence and good faith do not entitle one to a monopoly, it is not perceived why delay and the lack of good faith should do so."

Since this brief was completed, and ready for the printer, the case of *American Laundry Co.* v. *Prosperity Co.*, has been decided on appeal to the Court of Appeals of the Second Circuit.

Judge Hough rendered the opinion of the Court, which was concurred in by Judge Mayer and Judge Manton.

The Court held that Chapman-Winthroath did not particularly apply the statutory bars to divisional applications. They said:

> "There is no intent shown by that decision to overrule earlier cases dealing with divisional applications in no 'hostile spirit.' Some are cited with approval at page 137 of the report. Divisional and renewed applications (absente intervening rights), should logically be treated alike—see *Godfrey* v. *Eames*, 1 Wall. 317; *Smith* v. *Goodyear*, 93 U. S., 486."
>
> The decision in this and other circuits were not overruled or adverted to; *Victor Co.* v. *America &c.*,

Co., 145 Fed. 350; *General, &c., Co.* v. *Continental, &c., Co.*, 256 Fed. 660; *Rosenwasser* v. *B. E. Mfg. Co.*, 264 Fed. 114.

"It cannot be thought that the Court intended to overset without comment the whole current of authority; something so firmly established that it had long passed unchallenged into textbooks."

* * * * *

"it is the theory of laches that underlies and in truth constitutes the decision in Chapman's case. The result is that Chapman was finally held not guilty of laches in taking (for interference with Winthroath) the latter's claim, and annexing the same to his specification, more than one year, i. e., twenty months after Winthroath obtained a patent. Delay, inaction or laches were measured by the two years space of R. S. 4886, and other sections of the patent law and not by R. S. 4894 as the lower court had ruled in *Rowntree* v. *Sloan*, 45 App. D. C., 207.

* * * * *

There is no reason for any such special rules as to divisional applications. * * * What the office and all the courts were considering in the Chapman case, was the evil of applicants who had not claimed, watching the published art, and demanding interference with men whose patents quite likely suggested to them what they might have done. Such men can only be disciplined under existing statutes, by somewhat drastic imputations of laches, or establishing estoppels; and the Chapman decision has, we think, been so understood by the very court whose endeavors at discipline, the Supreme Court found too drastic. For example, *ex-parte* Nathan, 279 Fed. 925, pointing out that 'no excuse is offered' by the divisional applicant for not filing within two years of issue of intervening patent. If the rule were not of assumed or imputed laches, but of statutory firmness, why refer to excuses? Also, see *Ransdall* v. *Jahns*, 273 Fed. 365, where no division of application was made, and (semble) none was possible, but the doctrine of Chapman's case was applicable.

* * * * *

We still think in the Supreme Court, also, that in the absence of laches, estoppel or intervening

rights, a divisional application relates back to the original from which it was carved.

* * * * *

The ordinary difficulty with divided, renewed and sometimes even amended applications, is that they are efforts to validate something that was not carved out of anything but 'second thoughts,' and cannot be called amendments of any original." (bold type ours).

In the present case we have shown, we believe, that the Kane alleged divisional application insofar as it relates to the claims in suit, was not a division and, therefore, all the *statutory* bars apply, but if there were foundation for these claims in the original showing of the parent case, the subject matter thereof was *abandoned* by the inventor, was restored more than five years thereafter; not in the divisional case as filed, but by amendment made after a decision on claims for the same subject matter, *but not so broad*, had become final against the plaintiff-petitioner, even said interfering claims not having been made in the divisional case as filed, but inserted by amendment which involved the necessity of much additional description to the specification and made more than two years after the patent with which interference was asked (Podlesak) and in which judgment was entered against plaintiff-petitioner.

The language of the Court of Appeals, in deciding this case, is very apt where it stated, in effect, that, so long as plaintiff-petitioner thought it controlled Podlesak's as well as Milton's, it was not much worried as to who was the inventor, but when it found that its asserted rights under Podlesak were challenged, it then desired to destroy even its own property right therein if it could take the patent away from Podlesak, so it amended the Kane specification and added claims, fought Podlesak in an interference, and was beaten. Then it tried another tack, and put in some more claims as late as June, 1918, and by *ex-parte* proceedings they were granted.

Certainly in this case there is laches, abandonment, estoppel and intervening rights as mentioned in the recent decision of the Court of Appeals of the *Second* Circuit.

It should also be borne in mind that the patentee himself (Kane) before his invention was taken over by plaintiff-petitioner, was guilty of laches. Milton and Kane were co-employees. Kane took his alleged invention of the automatic cut-out to his attorneys and made no statement to them that there was anything of invention with respect to which these claims 7 and 8 were afterwards granted in the patent.

On the other hand, he expressly said that there was no invention in this feature. He filed his application for the automatic cut-out, permitted plaintiff petitioner to market magnetos for five years containing the Milton invention in detail, as well as this feature. He then decided, after the issuance of the Milton patent, that he was the real inventor of the subject matter of such patent and filed a divisional application for the purpose of provoking such interference. He also permitted the plaintiff-petitioner to manufacture for a period of years under the special bracket construction of the *Podlesak* patents and did not decide until five years after his application had been filed, and two years after the Podlesak patents had issued, that that ought to be his property, so that even the applicant himself, were he himself now in control of the patent, would be barred from upholding its validity by reason of his own laches. See *Kendall* v. *Winsor*, 21 How. 322, 329, in which the Court said:

> "It is, said the Justice (Daniel) the unquestionable right of every inventor to confer gratuitously the benefits of his ingenuity upon the public, and this he may do either by express declaration or by conduct equally significant with language—such, for instance, as an acquiescence with full knowledge in the use of his invention by others; or he may forfeit his rights as an inventor by a wilful or negligent postponement of his claims, or by an attempt to withhold the benefit

of his improvement from the public until a similar or the same improvement should have been made and introduced by others."

Then comes along the plaintiff-petitioner and "out-Herods Herod" in the inequities practiced by it—not only conducting the Milton-Kane interference in the manner we have discussed, but fighting a losing fight on the Podlesak patents, as has been set forth, and then coming in with these two claims 7 and 8, for the purpose of prolonging its monopoly on its own Milton patent, destroying the property of its licensors under the Podlesak patents, and keeping a monopoly of the whole thing for a period of more than twenty-one years instead of seventeen years, as provided for by the statutes.

This case would seem to come under the principles announced by this Court recently in *Woodbridge et al.* v. *The United States*, where the Court said:

> "No case cited to us presents exactly these facts, but the general principles upon which this Court has proceeded in cases of abandonment by conduct and its views of the rights of the public and the purpose of the constitutional authority to grant patents and of Congress in its legislative execution of that purpose, set forth in those cases, leave no doubt of the conclusion we must reach. *Penock* v. *Dialogue*, 2 Peters 1; *Wyeth* v. *Stone*, 1 Story 273, 282; *Shaw* v. *Cooper*, 7 Peters 292; *Kendall* v. *Winsor*, 21 How. 322, 329; *Planing Machine Co.* v. *Keith*, 101 U. S., 479, 485; *United States Rifle & Cartridge Co.* v. *Whitney Arms Co.*, 118 U. S. 22, 25."

Railway Co. v. Sayles, 97 U. S., 554, 563.

It would also seem that the familiar doctrine of *Railway Co.* v. *Sayles*, and the legion of later cases following and applying it, is applicable to and conclusive of the present case. Certainly a more flagrant instance of the broadening out of a pending application, and the introduction of

claims to new subject matter not previously claimed or indicated to be any part of the invention sought and intended to be patented, for the purpose of dominating and suppressing the use of inventions or devices which the public had been enjoying for years, and in the present instance prolonging in time and extending in scope the monopoly which the owner of the patent had previously held and asserted under another patent, has rarely come before the courts.

After introducing the invention into public use as Milton's invention, and deliberately patenting it as his invention, with full knowledge at the time of all of the facts now brought forward to show that another was the real inventor, and after advertising and selling the device as "Milton's Magneto," and marking it patented with the date of his patent after the patent issued, and asserting his patent against alleged infringers, plaintiff discovered an opportunity to not only prolong the life of the monopoly which it had been enjoying under his patent, but to widely extend its scope as well, so it acquired Kane's application and succeeded in taking away Milton's claims and repatenting them to Kane by means of an uncontested interference of which it controlled both sides; further attempted, but failed, after carrying its efforts all the way to the Court of Appeals of the District of Columbia, to likewise take away from its licensor, Podlesak, and repatent to Kane nine claims of Podlesak's patent under which it had been licensed and was operating; and, finally, succeeded in getting through the Patent Office, in defiance and disregard of the decision of the Court of Appeals, two broad claims relating to subject matter which had not only not been claimed, but which had not been even clearly disclosed in his original application, or in any manner indicated to be a part of the applicant's invention until more than five years after the filing of the application, and a still longer period after their subject matter had been disclosed in a patent to another and introduced into extensive public use, and which were finally allowed and patented to the plaintiff nine years after their subject matter had

been introduced into public use and placed on sale by plaintiff, operating under the invention and patent of another. Not only so, but the two claims in question were introduced for the first time long after the present suit was filed, and for the manifest purpose of dominating and controlling the devices and structures of the defendant, at which said suit was directed, which devices were then in extensive public use and on sale.

What the plaintiff has in effect accomplished has been to reissue its Milton patent, with broad claims to subject matter not in any way covered by the claims of the original patent—claims which it could not lawfully have made in a reissue application—and at the same time extended the period of the monopoly of the original patent four years.

Surely, there is every equitable and just reason why the ruling of the Supreme Court in *Chapman* v. *Winthroath* and the doctrine of *Railway Co.* v. *Sayles* should be applied with full force and effect to the facts and circumstances of the present case. In *Railway Co.* v. *Sayles* the Supreme Court, referring to amendments made to pending applications for the purpose of enlarging their scope, said:

> "The law does not permit such enlargements of an original specification, which would interfere with other inventors who have entered the field in the meantime, any more than it does in the case of reissues of patents previously granted. Courts should regard with jealousy and disfavor any attempts to enlarge the scope of an application once filed, or of a patent once granted, the effect of which would be to enable the patentee to appropriate other inventions made prior to such alteration, or to appropriate that which has, in the meantime, gone into public use."

That such was the exact purpose and effect of the introduction and allowance of Kane's claims now under discussion cannot be doubted. The very devices of the defendant at which the claims are directed in the present

suit had been in public use and on sale more than two years prior to the introduction of the claims,—indeed, the suit itself had been pending nearly three years—so that the purpose and effect of the claims was not only to appropriate that which had, in the meantime, gone into public use at the hands of the plaintiff, under another invention and patent, but which had likewise gone into public use at the hands of the defendant itself.

In *Hobbs* v. *Beach*, 180 U. S., 383, 396, in which the doctrine of *Railway Co.* v. *Sayles* was pressed upon the attention of the court in the defendant's behalf, the court declined to apply the doctrine upon the ground that, while there had been an expansion of the original application, such expansion had not been with reference to and had no effect upon anything which had gone into use or been given to the public in the meantime. Referring to the amendments made to the application, and to the machine used by the defendant and known as the Horton machine, the court said (pp. 395, 396):

> "All this was prior to the invention of the Horton machine, which was first put into use in September, 1889. Of course, the amendment of May, 1886, could not have been made with reference to this device. It is true that, in November, 1890, after application had been made for the Horton patent, new specifications and claims were filed, in which the invention was stated much more in detail, and with much fuller and more accurate language than before. But there appears to have been no attempt to expand the original claims for the purpose of including the Horton patent."

After then referring to its prior decision in *Railway Co.* v. *Sayles*, and quoting the language which we have quoted above, the court continued:

> "Had there been any expansion of the original specification and claims subsequent to the introduction of the Horton machine, especially if made with

reference thereto, *we should not have hesitated to apply the doctrine of that case.*"

In the case now before the court, on the other hand, claims 7 and 8 of the Kane patent were introduced into the application three years after defendant's devices, at which the claims are now directed, were put in public use and on sale, and nearly three years after the present suit had been brought—and nine years after the subject matter of the claims had been introduced into public use and placed on sale by the plaintiff, then operating under Milton's invention and patent. Surely, had the facts of the present case been before the Supreme Court in the reported case it would not have hesitated to apply the doctrine of *Railway Co.* v. *Sayles.*

See, also:

Steward v. *American Lava Co.*, 215 U. S., 161;
Kittle v. *Hall*, 29 Fed. Rep., 508, 513;
Dunn v. *Savage*, 30 Fed. Rep., 366, 368, 369;
Con. El. Light Co. v. *McKeepsort*, 40 Fed. Rep., 21, 26;
Hestonville Co. v. *McDuffee*, 185 Fed. Rep., 798, 802;
Gilmer Co. v. *Geisel*, 187 Fed. Rep., 606, 610;
United Wireless Co. v. *National Co.*, 198 Fed. Rep., 386, 395;
Motion Picture Patents Co. v. *Independent Co.*, 200 Fed. Rep., 411, 414, 416-17;
National Electric Co. v. *Telefunken Co.*, 209 Fed. Rep., 856, 864-5;
Karl Kiefer Co. v. *Unionwerke*, 218 Fed. Rep., 847, 855-6.

Assuming that no question is before this court except so far as concerns the Kane patent (claims 7 and 8 thereof)—all other issues having been disposed of by the decision of the Court of Appeals, and having referred to the license Exhibit D (Rec., Vol. I., p. 53) in support of our contention as to direct estoppel present in this case, a discussion of the contracts between the plaintiff corporation

and the Podlesaks and their assigns, defendant-respondent, is contained in Chapter A of an Appendix to this brief.

This Chapter of the Appendix will also necessarily be considered, if this Court decides to go into the question of the rights of the parties under the contracts, which were definitely settled by the Court of Appeals, and as to which no request for re-hearing was made. In other words, we have assumed that no question is now before this Court with respect to the interpretation of the contracts, but if, in spite of the reasons alleged by the petitioner for the grant of the writ of certiorari, the matter as to the interpretation of the contracts is referred to in their brief, we ask the Court to consider the said Chapter A of the Appendix. In this connection, we call attention to the language of the Court of Appeals' decision, 283 Fed. Rep., at page 87, as follows:

> "Much stress has been laid on the asserted 'equities of the case.' We are, however, unable to recognize their pertinency. The contract between appellee and patentees was voluntarily executed. It fixed the rights of both parties. Any enhancement in the value of the patent was unquestionably mutually advantageous. Whether patentees were guilty of ingratitude to their former employers in selling the reserved rights in the patent to a business competitor of such employer, is beside the question. That certain rights were reserved by patentees is conceded. That such reserved rights as were assignable were sold to appellant is also conceded. As between appellant and appellee, then, the issue is solely and simply a question of the extent of the assignable rights so reserved."

It is understood that, if the court should reverse the decision of the Court of Appeals on the question of the estoppels which formed the basis of its opinion in favor of Respondent, the question of the validity of the claims 7 and 8 of the Kane patent in suit must be considered—to see with which of the two decisions of the Court of Appeals this court agree. We have, for convenience of the court, dis-

ussed in Chapter B of the Appendix the prior art as to aid claims 7 and 8.

So, also, a discussion of the testimony introduced at he trial before the District Court on the question of riority between Milton and Kane is printed in said Apendix (Chapter C) one of the defenses being that Milton nd not Kane was the inventor. It is particularly interesting as showing that Kane did not consider he had any nvention in the subject-matter, which Plaintiff-Petitioner, ow the owners of the Milton patent, considered eight ears after the Kane application was filed to be of value ufficient to be utilized to prolong its monopoly and to lestroy its own Milton patent, to destroy the intervening atents rights of Podlesak more than two years old, even hough, in so doing, they were destroying the property of hose who were in close contractural relation with them n this very subject matter.

We think a review of the evidence, in connection with ur discussion of it, will satisfy the court, if it inquires nto the question, that Milton, and not Kane, was the real riginator of the new or improved design in question. No presumption to the contrary certainly can arise from the interference proceedings between Kane and Milton which have been reviewed, or from the issue of a patent to Kane as the result of those proceedings. Inasmuch as Milton's patent, for the same invention, was applied for and issued prior to Kane's, the assertion of priority of invention on behalf of Kane is practically an attack upon the validity of the earlier patent to Milton, and would seem to place upon Kane the burden of establishing such priority of invention beyond a reasonable doubt. We are satisfied that the proofs introduced on behalf of Kane cannot be held to meet any such requirement.

While the above quoted paragraph from the decision of the Court of Appeals seem to settle the question as to the equities between the parties under the contracts, and no reference was made thereto in the petition for certiorari, it may be that some contention will be raised before this

Court as to the bearing of the so-called "Manning-Van Deventer letter," as was done by the plaintiff-petitioner in both the District Court and the Court of Appeals. This is what is referred to in the above quoted language from the Court of Appeals, (*supra* 71) but is dwelt upon at length in Chapter D of the Appendix hereto.

CONCLUSION.

The application of the doctrine of equitable estoppel coupled with the laches of the plaintiff corporation precludes the holding of claims 7 and 8 valid.

(a) Assuming for the sake of argument that the subject-matter of these claims was originally claimed in the parent application (which is denied), it is a fact that, on February 12, 1912, the last semblance of any claim which might, by the greatest stretch of the imagination, be argued to include this subject-matter, was erased from said parent application; and it was not until October, 1914,—nearly three years after—that claims to the subject-matter were inserted for purposes of interference with the party, Milton.

During this period the invention had at all times been in public use by the plaintiff with, of course, the full knowledge of the applicant, Kane, so that it is clear there was an abandonment of the subject-matter and, therefore, an estoppel against the resurrecting of this subject-matter in the parent application, and a corresponding estoppel against the inclusion of the subject-matter in a divisional application not filed until 1915. This applies to Milton even, whose patent was *not* two years old when the Kane divisional was filed, but the invention of which had been in public use more than two years. Still more does it apply to the subject matter of the Podlesak patent which was more than two years old, when the claims to provoke interference were instituted.

Similar circumstances in a case of this character have recently been referred to by Judge Morris, District

Judge of the Third Circuit, in a decision reported in 290 Fed. Rep., 265, at page 675, wherein he states:

> "The Court of Appeals had before it only the question of priority of invention and matters subordinate and pertinent thereto. This court is not so restricted. It may determine whether either of the patents is void on any ground. Walker on Patents, § 317. The defendants have not intimated that claim 1 of the Browning patent may not here be held void on the ground of abandonment, if the evidence so warrants. Assuming that claim 19 of Browning's original application and claim 19 of the Johnson patent, No. 946,442, were directed to the same subject-matter of invention, as held by the law examiner, yet Browning, by amendment, struck that claim out of his application April 4, 1911. His present claim 1 was not inserted until June, 1915. Under the circumstances then existing the public interest required that Browning should not be lacking in diligence. Were Browning's claim allowed to stand, the public will be deprived of the use of the invention thereof until 1939—29 years from the date of the Johnson patent. Browning's delay of over 4 years after April, 1911, before renewing his claim has not been explained. I think that by reason thereof he must be held to have abandoned it.
>
> I am of the opinion that a decree adjudging claim 19 of Johnson patent, No. 946,442, void on the ground that the applicant was not the true and original inventor of the claimed invention, and adjudging claim 1 of Browning patent, No. 1,402,738, void on the ground of abandonment, should be entered."

So far as the circumstances are concerned, the above-entitled case is almost on all fours with the circumstances of the present case. The learned Judge did not refer to the Chapman-Winthroath case, but it is perfectly clear that, disregarding all the language of the Chapman-Winthroath case which was not pertinent to the exact state of facts as existing in that case, the reasoning is perfectly convincing leading to the conclusion that no liberties may be taken with a divisional case which could not be taken with the parent application.

Even assuming that in its broad sense a divisional application takes the place of the parent application, so far as the question of priority is concerned, and by taking the date of such parent case the Statutory bars would not apply; nevertheless, an actual abandonment of claims for subject-matter in a parent case for a period of more than two years after the issue of an intervening patent, or the springing up of an intervening right, creates an equitable estoppel against the restoration of claims to that subject-matter in the parent application, and to a greater extent even prevents the restoration of claims for that subject-matter in a divisional application.

After all is said, this is the reason of the ruling of the Supreme Court in the reissue cases. This court in interpreting the Miller Brass Company case in later decisions, has been careful to point out that it did not create a new Statutory bar, but that the decision was based upon the abandonment in the original application or patent of subject-matter, and that the applicant, after two years of intended delay or after an intervening right had accrued, could not restore claims for that subject-matter in a reissue application for the sole purpose of strangling development in the art. This ruling is especially applicable to a case such as the present where the result is not only to strangle development in the art, but to prolong the monopoly of the plaintiff to a period not contemplated by the patent Statutes.

(b) The procedure by which the plaintiff corporation manipulated the Kane-Milton interference, as is clearly explained in Chapter IV., creates an estoppel against their now prolonging the monopoly they had enjoyed under the Milton patent.

In this connection, it may be well to state that it has been well-settled that the mere prolongation of the monopoly by issuance of a later patent is not fatal to the validity thereof, when considered with respect to an earlier patent or similar subject-matter where the applications were pend-

ing concurrently. The present Chief Justice in the Ohio Brass case (*Thomson-Houston Electric Co.* v. *Ohio Brass Co.*, 80 Fed. Rep., 712, at page 724), before referred to, laid down the law on this point, which has been controlling ever since. Nevertheless, in that decision his Honor was careful to make an exception in the case of laches or fraud. Certainly, in the present case, laches of plaintiff corporation or Kane, the applicant, indicate not only abandonment, such as is referred to in paragraph (a), but also a wrongful prolongation of the monopoly as inhibited in the decision in the Ohio Brass case.

(c) The Kane-Podlesak interference, decided adversely to Kane, and accepted as final, as to structural claims for the same subject-matter as present claims 7 and 8, was certainly acquiesced in as to the lack of right of property in those narrow claims, and the estoppel, therefore, applies to the broad claims.

(d) The positive evidence that Kane abandoned this invention, as shown by the testimony quoted.

(e) Finally, his insertion of these broad claims for the purpose of overreaching his contract partners.

All these are instances in the career of this patent in the hands of plaintiff corporation, and any one of these reasons is sufficient to create an equitable estoppel against its being held valid.

Whether this Court holds that the language of *Chapman* v. *Winthroath* has been misconstrued by those courts which have followed it, to the extent of holding that a divisional application stands by itself and is governed by the same rules as to statutory bars as is the parent case, it is clear that a divisional application stands on no better footing than a parent application, and certainly the doctrine of equitable estoppel, laches, abandonment, etc., applied to the parent case are of double force when applied to a division.

In the Chapman-Winthroath case, the subject-matter claimed in the division had always been claimed in the

parent case, and had at no time been abandoned. Therefore, as the Chapmans filed their division within two years of the date of the intervening patent, and they had always shown in the parent case the attempt to claim such subject-matter, there was obviously no equitable estoppel against them.

The present case is far different with its actual failure to claim in the parent application and the testimony as to abandonment; with its abandonment of every semblance of a claim in the parent application for a period of nearly three years, during which plaintiff's and defendant's public uses were going on; with its failure for five years to file the divisional, and then only for the purpose of dominating its own; (Milton) patent, on which it had had a monopoly, and for the purpose of prolonging that monopoly; with its further attempt by way of interference with Podlesak to take away the property of parties with whom it had contractural relations under the subject-matter involved herein; and with its complete and positive acquiescence in the equitable estoppel, raised by the Court of Appeals of the District of Columbia on this score; and finally with its putting through the Patent Office in an *ex parte* proceeding these broad claims 7 and 8, prolonging its monopoly for many years, and destroying the property of the people with whom it had contractural relations under its former patents.

Thus it will be seen that, from the year 1909, continuously to the year 1916, neither Mr. Webster nor his company evidenced in any manner whatsoever that Kane, rather than Milton, was the originator of the newly designed magneto which they manufactured and sold through that period and advertised in his name, and also that there was no necessity for their acquiring the Kane application for protection against any patent that might be issued upon it, since the Webster Company already had an implied license or shop right to use the invention by reason of Kane's employment. Furthermore, even after acquiring the application there was no necessity for taking away Milton's claims and re-patenting them to Kane and attempting to

do the same thing with the Podlesaks claims. Obviously, the purpose for which the Webster Company acquired the Kane patent was for the use which it subsequently made of the Kane patent in the present suit, namely, to destroy the rights which, under license contract D, it had permitted the Podlesaks to retain, furthermore to prolong their monopoly of the subject-matter of both the Milton and Podlesak patents.

It is difficult to conceive of any equity which has not been violated by plaintiff corporation in connection with its procurement of these claims 7 and 8 of the Kane patent.

Respectfully submitted,

CHARLES L. STURTEVANT,
EUGENE G. MASON,
DAVID B. GANN,
For Defendant-Respondent.

APPENDIX

CHAPTER A.

The Podlesak Patents and License Agreements.

The Podlesak Patents.

On November 2, 1908, the two Podlesaks, being the joint owners of certain inventions and pending applications relating to improvements in magneto igniters for internal combustion engines (usually called simply "magnetos"), granted plaintiff's predecessor, Webster Manufacturing Company, the license to manufacture, use and sell devices embodying such inventions which appears at pages 39-44 of the record and constitutes Plaintiff's Exhibit A. Controversies having arisen between the parties under this license contract (referred to at various points in the voluminous pleadings but not discussed at length in the proofs) they were finally settled and entirely new contracts entered into on February 5, 1914. The first of these new contracts, constituting Plaintiff's Exhibit C* and printed at pages 48-52 (Vol. I.) of the record, granted plaintiff's immediate predecessor, the Webster Electric Company of West Virginia (successor to Webster Manufacturing Company, *supra*), an exclusive license under three patents which had in the meantime been granted to the Podlesaks upon the applications covered by the old contract. Neither of these three patents is involved in the decree appealed from, and we are not in any way concerned with plaintiff's rights under them, although the license contract will be later referred to for the purpose of contrasting it, and plaintiff's rights under it, with the second one of the two contracts entered

*Plaintiff's Exhibit B (Rec., 44-47), is an assignment between the Podlesaks themselves, fixing their relative interests in a large number of patents and pending applications jointly owned by them, and requiring no consideration here.

into between the parties on the same date. The patents covered by this contract Exhibit C related to a certain "tripolar" construction of magnetos, constituting a distinguishing and much exploited feature of plaintiff's magnetos, but not used by defendant.

The second of the two contracts above mentioned, constituting Plaintiff's Exhibit D and printed at pages 52-57 of the record, is headed "License Agreement—Shop Right," and purported to grant to plaintiff's predecessor a non-exclusive or shop-right license under certain additional patents and pending applications of the two Podlesaks, and included various agreements between the parties, one of which was a covenant on the part of the Podlesaks that they would not grant licenses to others to the inventions in question, although expressly reserving to themselves all rights under them.

The rights of both parties under this contract were expressly made assignable by the clause (bottom of page 56) reading:

> "It is agreed that this agreement shall extend to and be binding upon the heirs, assigns, and legal representatives of the parties of the first part, and the successors and assigns of the party of the second part."

The Podlesaks subsequently assigned to Splitdorf Electrical Company, defendant-respondent here, the various patents covered by this license contract, and all of their rights under the contract; and The Webster Electric Company, of West Virginia, the licensee under the contract, subsequently assigned all of its interest in the contract to Webster Electric Company of Wisconsin, the present plaintiff-petitioner.

Plaintiff-petitioner relies upon its rights under the license contract thus acquired by assignment from its predecessor to support its bill and the decress appealed from, while defendant-respondent relies upon its rights acquired by assignment from the Podlesaks (including title to the

patents themselves) as its defense to the bill so far as based on the Podlesak patents.

There was a further contract entered into between the parties on January 20, 1915, constituting Plaintiff's Exhibit E and printed at pages 57-60, Vol. I. of the record, but it related merely to an adjustment of the royalties upon a fixed sum basis instead of a percentage basis, and has no other bearing upon the rights of the parties under the two preceding contracts.

The License Agreement Exhibit D.

As clearly appears, not only by its title or heading and by its express terms, but as well by its repeated references to and contrast with the *exclusive* license granted by the other contract between the parties of the same date (Exhibit C), this license agreement, Exhibit D, was a mere non-exclusive or shop-right license, coupled with certain additional agreements between the parties. Thus, the second whereas clause of the contract, at the top of page 53, reads in part as follows (italics ours, here and elsewhere, unless otherwise noted):

> "And whereas the party of the second part is desirous of securing *a shop-right and license* to manufacture, use and sell the inventions and improvements, described and claimed in abovesaid patents, and applications for patents."

The corresponding clause for the license contract, Exhibit C, on the contrary, reads as follows (Rec., 48):

> "And whereas the party of the second part is desirious of securing *exclusive right and license* to manufacture, use and sell the inventions and improvements described and claimed in above said patents," etc.

So, with respect to the granting clauses of the two license contracts, that in Exhibit D (Rec., 53) reads as follows:

> "The parties of the first part do hereby grant unto the party of the second part *a shop right and license* to manufacture, use and sell the inventions or improvements, and each and every one of them, described, set forth and claimed in said patents," etc.

Whereas the granting clause in Exhibit C (Rec., 48) reads:

> "The parties of the first part do hereby grant unto the party of the second part the *exclusive right and license* to manufacture, use and sell the inventions or improvements, and each and every one of them described, set forth and claimed in said patent," etc.

The granting clause in Exhibit D is followed by the covenant (Rec., 53) that:

> "The parties of the first part agree that they have good right and lawful authority to grant *said shop right and license*, and that they have not heretofore parted with any right, license or privilege *inconsistent therewith* and that they will not, while this *shop license* to the party of the second part is in force, give or grant shop licenses to others to make, use, or sell hereinsaid inventions, expressly reserving, however, the right to themselves to make, use and sell the hereinsaid inventions."

The corresponding clause of Exhibit C (Rec., 49) reads as follows:

> "The parties of the first part agree that they have good right and lawful authority to grant *said exclusive license*, and that they have not heretofore parted with any right, license or privilege inconsistent therewith, and that they will not, while this *exclusive license* to the party of the second part is in force, make, use or sell said inventions, or grant, or give permission to, or encourage, others to do so."

Again, paragraph six of the license (page 55) reads as follows:

"Sixth: The party of the second part agrees that it will, except as hereinafter provided, use the devices manufactured under this *shop license* only in connection with, or for repairs to, the device manufactured under license which is covered by the agreement made on February 5, 1914, by which the parties of the first part gave to the party of the second part *the exclusive and sole right* to manufacture ignition devices covered by Patent No. 947,647, of January 25, 1910, Inductor Generators for Ignition Purposes, No. 949,483, issued February 8, 1910, Inductor Generators for Ignition Purposes, and No. 1,003,649, issued September 19, 1911, Inductor Generators for Ignition Purposes, and that whenever the devices covered by this *shop right and license* are made and sold and delivered not as a part of, or for use in connection with, the devices manufactured and sold under the aforesaid *exclusive license* dated February 5, 1914, then the party of the second part agrees that it will on the day of each and every report pay to the parties of the first part, jointly as a royalty or license fee, five per cent (5%) of all moneys or the equivalent thereof, which they may have received or that may be due them from the sales of or in exchange for the devices covered by this *shop right and license* sold and delivered during the preceding quarter. It is further expressly understood and agreed that the said devices manufactured embodying above improvements, or any of them, are not to be sold for less than a fair and reasonable price, based upon manufacturing and trade conditions."

In paragraph eighth on page 56 the agreement is again referred to as a "shop right or license," while paragraph ninth refers to it as follows:

"It is further agreed and understood that this *shop license* becomes terminated in the case or event the license given in the said agreement of February 5, 1914, becomes terminated by manner therein provided for."

This license agreement, Exhibit D, was not only a mere non-exclusive license or shop right by virtue of its express

terms, but it was so considered by everyone interested in it up to the time the present suit was brought. Thus, in June, 1915, plaintiff's predecessor, Webster Electric Company of West Virginia, jointly with the two Podlesaks, brought suit by the same counsel now representing plaintiff against Alamo Manufacturing Company (Vol. II., p. 69) and alleged (p. 71) that the Podlesaks "granted unto said Webster Electric Company *a shop-right license* to make, use and sell the invention described in said Reissued Letters Patent No. 13,878."*

So, in a letter of plaintiff's counsel to Henry J. Podlesak, in reference to said suit (Vol. II., 354, 355) plaintiff's counsel said:

> "The *shop-right license* to the Webster Company alleges that the patents, including the bracket patent, are owned jointly by yourself and Emil."

And in the assignment of the license agreement itself from plaintiff's predecessor, the Webster Electric Company of West Virginia, to plaintiff (Vol. II., 705, 706), it is designated "*license agreement* (*shop right*)."

On September 4, 1915, the license agreements, together with the legal title to all of the patents covered by them, and all of the rights of the Podlesaks under the agreements, were assigned by them to Splitdorf Electrical Company, the defendant-respondent, and Sumter Electrical Company, jointly, by an instrument constituting Plaintiff's Exhibit F and printed at pages 60-65 of the record; and the Sumter Company subsequently assigned all of its interest in the patents and the license agreements to the Splitdorf Company by the several instruments found at pages 218-220 Vol. I. of the record, and pages 217-219 of Vol. II.

The Splitdorf Electrical Company, Respondent here,

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*As hereinafter pointed out, this suit was originally brought, at the instance of the Webster Company and by its present counsel, in the name of one of the Podlesaks alone, the Webster Company not being considered even a necessary party to the suit.

thus became the owner of the entire, right, title and interest in and to all of the inventions and letters patent in question, subject only to the license agreements previously made by the Podlesaks with plaintiff's predecessor. The orginal assignment from the Podlesaks to the Splitdorf and Sumter Companies expressly recited these license agreements with plaintiff's predecessor, and the assignment and sale by the Podlesaks to the Splitdorf and Sumter Companies was expressly made subject to the rights of plaintiff's predecessor under such agreements, copies of the agreements being attached to the assignment and referred to therein. Said assignment constitutes Plaintiff's Exhibit F and is printed at pages 60-65, Vol. I. of the record. As will be there found, it first recites that:

> "Whereas the parties of the first part are the present joint owners of certain inventions relating to inductor electric generators for internal combustion motor ignition, and of certain letters patent granted therefor as follows:"

And then recites the list of patents and pending applications under which plaintiff's predecessor was licensed, and then continues:

> "And whereas said parties of the first part have heretofore granted licenses under said patents to the Webster Electric Company of Racine, Wisconsin, as evidenced by three certain written instruments dated respectively the 5th day of February, 1914, the 5th day of February, 1914, and the 20th day of January, 1915, of which true copies are hereto annexed and marked respectively Exhibits A, B and C; and
>
> Whereas the parties of the second part having been nominated by F. C. Manning under his option dated August 20, 1915, and being his assignees thereof, are desirous of acquiring the entire interest in the aforesaid inventions, letters patent and applications, together with all rights to manufacture, use and sell said inventions *subject only to the licenses heretofore granted to the Webster Electric Company*, also the entire interest of the parties of the first part in the

aforesaid agreements with the said Webster Electric Company."

And then, finally, in the granting clause in the assignment (p. 62) it was expressly recited that:

"This assignment being subject only to the licenses hertofore granted to the Webster Electric Company."

As will thus be clear, the Splitdorf Electrical Company, defendant-respondent, by virtue of the several assignments referred to acquired all the rights and interest of whatsoever nature held by the Podlesaks at the date of their assignment, including the legal title to the patents and pending applications and all rights and interest of the Podlesaks under the license agreements with plaintiff's predecessor. It therefore remains simply to determine what the rights and interest of the Podlesaks were at the date of their assignment. Whatever they were, they passed to their assignees and are now vested in the defendant-respondent here.

Under the first of their two license agreements of February 5, 1914, with plaintiff's predecessor (Plaintiff's Exhibit C, Rec., 48) the Podlesaks had granted to plaintiff's predecessor "the *exclusive* right and license to manufacture, use and sell the inventions" covered by the three patents recited in the agreement, reserving to themselves certain royalties. What their assignees took under and in respect to those patents and that license agreement, therefore, was the mere naked legal title to the patents covered by the agreement, and the right to the reserved royalties.

In the case of the second license agreement, however, (Plaintiff's Exhibt D, Rec., 52), and the patents covered by that agreement, the situation was entirely different. The Podlesaks had not parted with their title to any of the patents or pending applications recited in it, nor with any of their rights or interest under said patents and pending applications, excepting the single non-exclusive shop-

right or license which they had granted to plaintiff's predecessor. They retained and held the legal title to the patents, and all of the rights arising out of ownership of the patents, subject only to the non-exclusive license which they had granted, and to their agreement not to license other persons. They had the full right, by virtue of their ownership of the inventions and patents, to use the inventions themselves and to exclude others (excepting their licensee) from using them, and but for their agreement with their licensee not to license other persons they might have granted an unlimited number of licenses to others for the use of the patented inventions. The express reservation, in the license agreement, of the right to use the inventions themselves was manifestly unnecessary and superfluous as a matter of law, since they retained and held that full right, by virtue of their ownership of the inventions and patents, without any such reservation. It was unnecessary and superfluous, just as was the covenant of the Podlesaks in their other license agreement of the same date, in which, after granting plaintiff's predecessor "the *exclusive* right and license to manufacture, use and sell the inventions" described and claimed in the patents covered by the license, they covenanted that "they (the Podlesaks) will not, while this exclusive license to the party of the second part is in force, make, use or sell said inventions or grant, or give permission to, or encourage, others to do so." (Rec., 49.) The draftsman of the two instruments, not being content with, or not fully understanding and appreciating, the legal effect of the instruments, sought to reinforce them with the covenant in the one case and the reservation in the other, to make clearer the intended rights of the parties under them.

Before making their license agreement with plaintiff's predecessor the Podelsaks admittedly had the full right to use the patented inventions themselves and to exclude others from using them. When and how, then, did they part with or lose such right to use the inventions themselves? Certainly not by the mere grant to plaintiff's predecessor of a

non-exclusive license or shop-right to use the inventions, for that grant left in them all of the rights they before enjoyed with the single exception of the right to exclude plaintiff's predecessor from using the inventions. Surely not by the mere additional agreement with plaintiff's predecessor that they would not license others to use the inventions, for that additional agreement merely deprived them of the right to grant such other licenses, and left them in the full enjoyment of all other rights which they previously held. If they did not part with or lose their original right to use the inventions themselves because of either of these provisions in the license contract, thy certainly did not part with or lose such right because of any other provision it contained.

Suppose, for purposes of illustration, that the Podlesaks had been themselves engaged in the manufacture and sale of devices embodying their patented inventions prior to the making of the license contract with plaintiff's predecessor. Would they have been obliged to discontinue such manufacture and sale because of their grant to plaintiff's predecessor of a shop-right or non-exclusive license to use the inventions? If not, would they have been obliged to discontinue such manufacture and sale merely because of their additional agreement with plaintiff's predecessor that they would not grant similar licenses to others? Or because they authorized plaintiff's predecessor to bring suit in their names against infringers? Or because they agreed that plaintiff's predecessor might, if they should subsequently expressly consent in writing, grant certain nonexclusive licenses to others to use the patented inventions?

It seems too clear to admit of serious question, or to warrant extended discussion, that by none of the provisions of the license contract to plaintiff's predecessor, nor by virtue of all of them together, did the Podlesaks in any way part with or lose the full right which they before enjoyed to use the patented inventions themselves as an incident to and an accompaniment of their ownership of the inven-

tions and patents, and that their express reservation in the license agreement of the right to so use the inventions was in no way necessary in order to give them such right.

It is of course quite unnecessary to argue the proposition that the grant of a non-exclusive license under a patent, coupled with an agreement not to license others, is an entirely different thing, in legal effect, from the grant of an *exclusive* license under the patent. The latter confers upon the licensee all of the rights of the patentee under the patent, leaving in him only the naked legal title. Indeed, if it is an exclusive right to make, use and sell, for the full term of the patent, it transfers the entire monopoly and is in legal effect an assignment. The former divests the patentee of none of his rights under the patent, except his right to exclude his licensee from using the invention, and his right to license others to use it. He retains the full right to use the invention himself which he held before the grant of the license, and he retains the sole right to exclude all others, excepting his licensee, from using the invention. And these rights pass to any assignee to whom he may assign the patent and such assignee succeeds to the full enjoyment of them.

Plaintiff's argument to the contrary, which prevailed in the District Court, appears to us as unsound as would be the proposition that the owner of a farm who granted to a neighbor the right to pasture his cattle upon it, and agreed not to grant similar rights to others, would be debarred from pasturing his own cattle upon it; while the argument that the assignee of a patent, under the circumstances described, would not succeed to all the rights of his assignor appears as groundless as would the suggestion that a purchaser of the farm in question would not succeed to all of the rights of his vendor.

We know of no principle of law, and have been unable to discover any authority, upon which the decree of the District Court, holding that the assignees of the Podlesaks did not succeed to their full rights, can be supported; and

without such support plaintiff's case on the Podlesaks' patents must necessarily fail.

The Podlesaks had the full right to use the inventions themselves, and to transfer that right to others, as an accompaniment of their ownership of the patents, *because they had never parted with that right;* they had the right to use the inventions themselves for the further reason that they had expressly reserved that right in the license agreement; and they had the right to *assign* such reserved right to another because the rights of both parties under the license agreement *were expressly made assignable* by the clause of the agreement heretofore referred to.

When they expressly reserved, as they did, "the right to themselves to make, use and sell the hereinsaid inventions" (Rec., 53) and when the agreement further provided, as it did (Rec., 56)

> "that this agreement shall extend to and be binding upon the heirs, *assigns* and legal representatives of the parties of the first part, and successors and assigns of the party of the second part,"

the legal effect of the instrument, so far as concerns the right of the parties of the first part (the Podlesaks) to assign their reserved right "to make, use and sell the hereinsaid inventions," was precisely the same as if the reservation itself had been of "the right to themselves *and their heirs, assigns and legal representatives* to make, use and sell the hereinsaid inventions."

Suppose, for purposes of illustration, that the Podlesaks, instead of assigning their patents and their rights under the license contract, had themselves engaged in the manufacture and sale of ignition devices embodying the patented inventions, and had invested a large sum of money and built up a large business and established a valuable good will—and had then died: Can it be doubted that the right to continue the use of the inventions, and to carry on such established business, would have passed to

their "heirs and legal representatives"? And if so, can there be any doubt that, while alive and themselves engaged in carrying on such business, they had the right to transfer it, and all of their rights pertaining to it, to another under the express provision of the license contract which made their rights assignable?

If the reserved right and all other rights of the Podlesaks under the agreement were not assignable, by virtue of the clause in question, then neither were the rights of plaintiff's predecessor assignable; and yet plaintiff holds all the rights it has under the license agreement, and under the patents covered by it, by virtue of an assignment from its predecessor, the original licensee.

No one has questioned the right of plaintiff's predecessor to assign and transfer its rights under the license agreement to plaintiff, and no one has questioned the fact that plaintiff holds all of the rights it has by virtue of such assignment. The assignment itself will be found at pages 705-709, Vol. II., and it is pleaded in the supplemental bill in this case, at page 187 of the record, as follows:

> "And your orator further shows unto your Honors that on or about the 12th day of March, 1918, the said Webster Electric Company of West Virginia, in consideration of the sum of one dollar and other good and valuable consideration, by a written instrument dated the 12th day of March, 1918, which said instrument was duly filed for record and recorded in the United States Patent Office on or about the first day of July, 1918, *bargained, sold, granted, transferred, assigned, and conveyed* unto your orator, the said Webster Electric Company of Wisconsin all the property, property rights, business and assets belonging to the said Webster Electric Company of West Virginia, or in which the said Webster Electric Company of West Virginia was interested including all its copyrights, trade rights, trade names, patents, patent rights, devices and inventions of every kind and character owned by or in which the said Webster

> Electric Company of West Virginia had any interest whatsoever, *and including any and all interest in and to and any or all benefits, and any and all claims and rights of action past or future arising out of any and all of the following contracts, among others, to-wit:*"

—and then follows a recitation of the three license agreements between plaintiff's predecessor and the Podlesaks.

The proof of plaintiff's title, under the foregoing allegation of its bill, is to be found in the stipulation printed at pages 217-218, Vol. I., of the record, which recites, in the second paragraph, that:

> "Webster Electric Company of Wisconsin *acquired by purchase* the entire business, rights and obligations of Webster Electric Company, a West Virginia corporation, the plaintiff named in the original bill of complaint, by a written instrument executed on or about March 12, 1918."

It is of course well settled in the patent law that a license is personal merely, and not assignable, in the absence of express provision for assignability in the license itself. Therefore, but for the clause of the license agreement between the Podlesaks and plaintiff's predecessor which expressly conferred upon both parties the right to assign their respective interests under the license agreement, plaintiff's predecessor could not have assigned and transferred its rights to plaintiff; *and the same clause which conferred upon plaintiff's predecessor the right to assign and transfer its rights and interest under the contract conferred the like right upon the Podlesaks in respect to their rights and interest.*

It is therefore clear that by virtue of the legal effect of the instrument, independently of the reservation clause, as well as by virtue of the reservation clause and the subsequent clause conferring the right of assignability on both parties, the Podlesaks had the full right to use the patented inventions themselves and to transfer that right to others

as an incident to and accompaniment of the title to the patents covering such inventions. This is clearly the legal effect of the provisions of the instrument which have been considered, and the instrument contains no other provisions inconsistent with them, or which in any way modify the rights of the parties which have been discussed.

One of the additional provisions, found in paragraph second (Rec., 54), was the authority conferred upon the licensee to act as the agent and attorney of the licensors "for the purpose of joining them as parties complainant where necessary or desirable, in any suit which the party of the second part may wish to bring on account of the infringement of any of said Letters Patent," and the authority given the party of the second part as such agent and attorney to execute "any papers which may be necessary or convenient to the commencement and maintenance of any such suit." This provision manifestly did not affect any of the rights of the parties with which we are concerned in this case.

A further provision of the instrument, found in paragraph eighth (Rec., 56) was to the effect that

> "The party of the second part, *with the approval, in writing, of the parties of the first part* shall have the right to grant shop-right or license for the manufacture, use and sale of devices embodying the invention described and claimed in said Patents No. 1,022,642 and No. 1,055,076, to makers of, or dealers in, gas engines, and gas engine accessories."

—but this provision manifestly conferred no rights upon the licensee in any way inconsistent with the original or reserved rights of the licensor. Indeed, it was a provision of little if any legal effect, since the rights of the licensee under it were entirely dependent upon the subsequent approval, in writing, of the licensors respecting any action of the licensee, and there was nothing in the instrument requiring the licensors to grant any such ap-

proval. In substance it was nothing more than a statement that if the parties should subsequently agree that other licenses of the kind described should be granted, then by virtue of such agreement they might be granted; otherwise not.*

It was the plain intent of the parties under the *first* of the license agreements (Exhibit C) that the licensees should have the *exclusive* right to make, use and sell the patented inventions, and to reinforce and emphasize that understanding there was inserted in the instrument the covenant on the part of the licensors (Rec., 49) that they would not "while this exclusive license to the party of the second part is in force, make, use or sell said inventions or grant, or give permission to or encourage others to do so"; and it was the equally plain intent of the parties under the *second* license agreement (Exhibit D) that the licensee should *not* have any such exclusive right, but should have a mere non-exclusive shop right or license, the licensors reserving to themselves all other rights excepting merely the right to grant further licenses, and to make clear and definite the fact that the licensors retained and reserved to themselves the right to use the inventions there was inserted the express reservation to that effect.

The legal effect of the instruments as drawn, and the intended rights of the parties, therefore clearly concur, and there would seem to be no ground whatever upon which the right of the Podlesaks to use the invention themselves, and to transfer that right to another, can be successfully controverted or questioned.

We submit, therefore, that by virtue of its ownership of the patents in question, and of all of the rights of the Podlesaks under the patents and under their license agreements with plaintiff's predecessor, the defendant-petitioner here has the full right and license to use the inventions in controversy, and that plaintiff had no cause of action whatsoever against it because of its use of them.

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*Moreover, it related to only *two* of the *six* inventions and patents included in the license contract.

CHAPTER B.

Prior Art as to Claims 7 and 8.

If this court should reverse the decision of the Court of Appeals on the question of equitable estoppel, which formed the basis of their opinion in favor of defendant, then the question of the bearing of the prior art upon the claims sued on must be considered.

Weber Patent No. 820,535.* This patent discloses an oscillating magneto of the same general character as that of the Kane patent in suit, and designed for the same use and in the same way as the Kane construction; and all of the parts which are, in the Kane construction, mounted upon and carried by the ignitor plug, are likewise mounted upon and carried by the ignitor plug in the Weber construction, with the single exception of the spring which operates to return the oscillating armature to normal position after it has been displaced therefrom and released.

The ignitor plug, the electrodes carried by it, the means for separating the electrodes to produce the spark, the oscillating armature and field magnets of the magneto, the means for oscillating the armature to produce a current in the circuit, and the circuit and its connections are each and all identical in principle and mode of operation with the corresponding parts in the Kane patent, differing, where they differ at all, merely in form, and being substantially the same, even in form, in many instances. Thus, the ignitor block or plug 3, with its extension 4 projecting into the cylinder 1, and the fixed and movable electrodes 5 and 24-25 mounted in said block, the circuit wire 11 having its end clamped between the nuts 9 and 10 on the outer end of the fixed electrode 5, and the crank arm 26 secured to the outer end of the movable electrodes 24-25, and having the spring 29 connected to it and the adjustable screw 27

*Vol. III., 771.

mounted in its outer end and secured in adjusted position by a lock nut, will at once be recognized as corresponding, even in form and arrangement, to the ignitor block or plug 8 with its extension 9, the fixed electrode 10 and movable electrode 26, the wire 11, having its ends secured between the nuts 12 and 13 on the outer end of the fixed electrode 10, the crank arm 27 secured to the outer end of the movable electrode 26, the spring 28 acting on said crank arm and the adjustable screw 29 carried by its outer end and secured in adjusted position by the lock nut, in the Kane construction. Likewise, the magneto proper, comprising the field magnets 17 and the oscillating inductor or armature 16 mounted upon the rock shaft 15 within the magnets 17 and their pole pieces 18, and the wire 22 connected at one end to one of the pole pieces 18 (by the screw 21) and at its opposite end to the ignitor block 3 and serving to complete the circuit, are each and all identical, excepting in details of form, with corresponding parts in the Kane patent.*

So, also, with respect to the remainder of the parts and their mode of operation. In the Weber construction the oscillating armature is yieldingly held in normal position, and returned thereto when displaced therefrom and released, by a single coiled spring 50 corresponding in purpose and function and mode of operation to the two coiled springs 31, 32 in the Kane construction. This coiled spring 50 surrounds a rod 39 whose left-hand end is detachably connected with an arm 40 projecting from the armature shaft 15, while its right-hand end is connected to a slide 33 mounted in a guideway carried by a bracket 31 secured to the engine cylinder 1. (See Figs. 7, 8 and 9; also the model of the Weber construction in evidence as Defendant's Weber Illustrative Apparatus No. 52). The coiled spring 50 which surrounds the rod 39 is se-

*With respect to the difference in the form of the permanent magnets 17 of the Weber construction and the permanent magnets 22 in the Kane construction, defendant in the present case follows Weber instead of Kane. (Vol. II. 51, 53, 55, 57.)

cured at its right-hand end to said rod and at its left-hand end bears against and is connected to the upturned end of the bracket plate 49. The slide 33 is provided near its right-hand end with a raised portion forming a shoulder 34 to co-operate with the plunger rod 35 (corresponding to the plunger rod 36 of Kane) whose opposite end is connected to a crank 37 upon the engine shaft, the revolution of which serves to reciprocate the rod 35. Located beside the slide 33 is a block 42 having an inclined or cam surface at its right-hand end. The end of the plunger rod 35 is sufficiently widened to not only engage the shoulder 34 on the slide 33, but to also co-operate with the inclined surface of the block 42. When the plunger rod 35 is reciprocated toward the left it carries the slide 33 with it to the position shown in Figure 8, moving the rod 39 to the left and rocking the armature shaft 15 in a corresponding direction and compressing the coiled spring 50, as shown. When the parts have been brought to the position of Figure 8 further movement of the plunger rod 35, as its widened end rides up the inclined surface of the block 42, will disengage it from the shoulder 34 on the slide 33 and release the latter, whereupon the slide and its connected parts will be instantly returned toward normal position by expansion of the spring 50, and their momentum will be such that it will carry them slightly beyond normal position, as indicated by the dotted lines in Figure 9, and cause the hammer arm 41 upon the armature shaft to contact with the end of the screw 27 carried by the crank arm 26 of the movable electrode, and rock said arm and electrode to the position shown by the dotted lines in Fig. 9, thereby separating the electrodes 25 and 5 and producing the spark, after which the slight retraction of the slide 33 and the parts moving with it to normal position, by the spring 50, will permit the spring 29 connected to the crank arm 26 to again bring the electrodes together. (See Weber Spec'n., p. 2, ll. 21-43.)

This is the identical mode of operation, and the same

combination and co-operation of parts, as in the Kane patent, the only difference being that in the latter the end of the reciprocating plunger rod 35 directly engaged an arm secured to and projecting from the armature shaft 15 and corresponding to the arm 40 secured to and projecting from the armature shaft 15 in the Weber construction, whereas in the latter the slide 33 and connecting rod 39 are interposed between the plunger rod 35 and the arm 40 on the armature shaft.

Coming now to a comparison of the disclosure of the Weber patent with that of the Kane patent with respect to the subject matter constituting the sole novelty of claims 7 and 8 of the Kane patent—the mounting of the magneto generator upon the ignitor block or plug so that the two may be removed and replaced as a unitary structure without disturbing the adjusted relation of the co-operating parts—the magneto generator in the Weber construction is mounted upon and carried by a supporting shelf or bracket 53 which is in turn secured to and carried by the ignitor block 3. This shelf or bracket 53 consists of a horizontal rectangular plate 53 of the general outline of the plate marked 13 in Fig. 1, the latter being a non-magnetic plate resting upon the plate or bracket 53. The plate 53 is provided with an upturned flange 54 at its inner end, by means of which it is secured to the ignitor block or plug 3, as shown in Figs. 1 and 3. The entire magneto generator is mounted upon the plate 13 resting on and secured to the plate or bracket 53 and carried by the latter, and the plate or bracket 53 is supported entirely by the ignitor block 3.*

The description of these last-mentioned parts is found at lines 17-36 on page 4 of the specifications and reads as follows:

> "In order that the crank-arm 26 and the hammer-arm 41 may hold their relative positions with re-

*Here, again, defendant's construction follows that of Weber rather than that of Kane, since defendant's magneto is bodily removable from its supporting shelf or bracket (as in Podlesak) instead of being removable only in parts and piecemeal as in Kane.

spect to each other intact, I prefer to mount the plate or board 13 upon a horizontal bracket 53, the inner end of which is provided with a vertical flange 54, secured rigidly to the ignitor-block 3. The ignitor-block 3, which is such as are commonly used in engines of this type, may be sent, together with the magneto-electric machine and some of the parts connected therewith, and fitted to an engine in lieu of a similar ignitor-block provided with another sparking mechanism. The bracket 31, together with the parts mounted thereon, may also be sent from the factory ready to mount on an engine already set up. In such cases it is but necessary to connect the rod 39 to the crank-arm 40 after the brackets 53 and 31 are secured in place."

As will be understood from the foregoing, the described purpose of the arrangement shown is to enable the crank arm 26 of the movable electrode and the hammer arm of the armature shaft to "hold their relative positions with respect to each other intact," and this is accomplished by mounting the magneto generator upon a horizontal frame or bracket "rigidly secured to the ignitor block 3."

It is true, of course, that the shelf or bracket 53 is not formed *integrally* with the ignitor block, as in the Kane construction, but it is an elementary proposition of the patent law that two parts rigidly secured together are the mechanical equivalent of the same parts formed integral with each other, and *vice versa*, where they perform the same function, so that there is no material difference between the Weber and Kane constructions in this respect. The former would therefore seem to furnish a complete response to the subject matter of the two claims of the Kane patent under consideration, and a substantial anticipation of them.

The two criticisms of the Weber disclosure offered by plaintiff's counsel and expert in their effort to distinguish it from that of the Kane patent, are, first, that it is not clear from the specification and drawings of the

Weber patent, how the vertical flange 54 of the horizontal shelf or bracket 53 is "secured rigidly to the ignitor block 3," and, second, that the spring 50 for returning the armature to initial position after it has been moved therefrom and released by the plunger rod 35 is not mounted upon and carried by the shelf or bracket which carries the magneto generator, as is the case in the Kane construction.

With respect to the first of these criticisms, it would seem unnecessary that the specification should describe how the flange 54 of the supporting shelf or bracket 53 is "secured rigidly to the ignitor block 3," for it manifestly might be done in a variety of ways—by welding or riveting, or by bolts or screws, as admitted by plaintiff's expert, Mr. Webster, at page 782 of the record. But plaintiff assumes, and contends, for the purposes of its criticism, that the drawings indicate that the flange 54 is secured to ignitor block 3 by the two screw bolts whose heads are shown in Figures 1 and 2, and by these alone, and that these bolts also secure the ignitor block to the cylinder wall; and they argue, from this assumption, that when the bolts in question are loosened and removed, for the purpose of removing the ignitor block from the cylinder, the shelf or bracket carrying the magneto will be released and become detached from the block, and the unitary character of the structure be thereby destroyed. But this assumption and conclusion would seem to be not only unnecessary and unwarranted, from anything disclosed in the drawings of the Weber patent, but to be inconsistent with the description of the purpose of the described arrangement given in the specification, and reading:

> "In order that the crank-arm 26 and the hammer-arm 41 *may hold their relative positions with respect to each other intact*, I prefer to mount the plate or board 13 upon a horizontal bracket 53, the inner end of which is provided with a vertical flange 54, *secured rigidly to the ignitor-block* 3."

If the horizontal shelf or bracket carrying the magneto were to be released and fall away upon the removal of the ignitor block from the cylinder, as plaintiff assumes, the relative positions of the crank arm 26 and hammer arm 41 with respect to each other manifestly could not be "preserved intact" as described in the specification, for the crank arm 26 is secured upon the end of the rock shaft 24 of the movable electrode 25, which rock shaft is mounted in and carried by the ignitor block and plug, whereas the hammer arm 41 is carried by the armature 15 of the magneto generator which is secured upon and carried by the horizontal shelf or bracket 53. In order that the relative positions of the crank arm 26 and hammer arm 41 may be "preserved intact" it seems clear that the shelf or bracket carrying the magneto generator was not intended to be detached from the ignitor block 3 as an incident to the removal of the latter from the engine cylinder.

It will hardly do to assume that the quoted statement of the specification simply means that the described provision is for the purpose of enabling the crank arm and hammer arm "to hold their relative positions with respect to each other intact" *when the parts are secured to the engine cylinder* and in operation, for in that case there would be no necessity of mounting the supporting shelf or bracket on the ignitor block at all—it might just as well be secured to the cylinder independently of the ignitor block.

That the supporting shelf or bracket was intended to be "secured rigidly to the ignitor block" and removable therewith as a unitary structure would seem to be further evidenced by the additional reference to these parts in the same quoted paragraph of the specifications, to the effect that:

> "The ignitor-block 3 * * * may be sent, *together with the magneto-electric machine and some of the parts connected therewith*, and fitted to an engine

in lieu of a similar ignitor block provided with another sparking mechanism."

This language would seem to indicate that it was contemplated that the ignitor block and the magneto-electric machine could be sent out as a unitary structure, to be "fitted to an engine in lieu of a similar ignitor block provided with another sparking mechanism."

With respect to the alleged insufficiency of the disclosure or description of the particular means by which the flange 54 of the supporting shelf or bracket is "secured rigidly to the ignitor block 3," it is to be noted that the specification contains no description of the means for securing the ignitor block itself to the engine cylinder, and that in this respect the Weber patent corresponds to the Kane patent itself, the latter containing neither description nor disclosure of the means employed for that purpose. The drawings of the Weber patent (Fig. 3) do show a screw bolt passing through the upper portion of the ignitor block 3 and evidently forming part of the means for securing the block to the cylinder. Plaintiff asserts that this bolt alone would be insufficient for the purpose, and that the two bolts shown passing through the flange 54 and lower part of the ignitor block would also be necessary in order to firmly secure the block to the cylinder wall. This may or may not be the fact, depending upon the tightness and rigidity of the fit of the plug 4 of the ignitor block in the opening in the engine cylinder;*

*It is a common practice to secure magneto generators of this general character to the cylinder wall with a single bolt. In the samples of Defendants' Type B generators, which plaintiff has introduced in evidence in this case as its Exhibits Nos. 69 and 79, the ignitor plug and all of the parts carried by it are secured to the cylinder wall by a single bolt passing through a hole or recess in the upper portion of the flange of the plug, in the same location as the upper bolt in the Weber disclosure. This is clearly shown in plaintiff's diagram of Defendants' Device Type B on page 53 of Vol. II., where the hole or recess is lettered U. In Defendants' Type A device the parts are secured to the cylinder by a single bolt passing through the casting at the right of the plug, as found in Plaintiff's Exhibit No. 44. A single bolt is amply sufficient, in all of these cases, to firmly secure the parts to the cylinder.

but even if the two lower bolts passing through the flange 53 did constitute part of the means, and an essential part of the means, for securing the ignitor block to the cylinder wall, it does not necessarily follow that the removal of these bolts would cause the supporting shelf or bracket to be released and become detached from the ignitor block, for that would only be true in event such bolts constituted the sole means for securing it to the ignitor block, and there is no basis for this assumption, as we have seen.

Plaintiff calls attention to the fact that the holes for the three bolts shown in Fig. 3 of the Weber drawings also appear in Fig. 2, which is a view of the opposite side of the block from that in Fig. 3, thus showing that the holes in question pass all of the way through the block, from which plaintiff argues that all of the bolts therefore presumably passed entirely through the block and entered the wall of the cylinder. But as explained by Mr. Carter (Vol. I., 700) the holes in the block would undoubtedly, as a matter of machine practice, be bored all the way through the block, whether all of the bolts were intended to pass entirely through the block or not. He also calls attention to the fact that the hole in the block in which the pin 30 (Fig. 1) is seated, is shown in Fig. 2 (as well as the bolt holes) although the pin 30 of course does not pass through or beyond the block, and there is no occasion, excepting as a matter of machine-shop practice, for having the hole in which the pin is seated pass entirely through the block.

In view of the incomplete and imperfect, if not wholly insufficient, disclosure in the Kane patent itself of the subject matter of claims 7 and 8 of the patent, as heretofore explained, it would seem that plaintiff's criticism of the disclosure of the Weber patent, in the respects just considered, should not be given the weight plaintiff seeks to have accorded to it.

With respect to plaintiff's other criticism, that the spring 50 which returns the armature to initial position,

after it has been moved therefrom and released by the plunger rod 35 is not mounted upon the supporting shelf or bracket which carries the magneto generator and which is itself carried by the ignitor plug, it is clear, of course, that this fact does not affect in any manner the mode of operation of the parts or the results accomplished, which are identical with those of the Kane construction; while so far as may concern any necessity for adjustment, due to the fact that the spring and the rod and slide with which it is connected are mounted upon a separate bracket 31, such adjustment would have relation only to the timing of the disconnection of the plunger rod 35 from the shoulder 34 on the slide 33, and the same provision for such adjustment is present in and required by both the Weber and the Kane constructions, as heretofore explained. The relation of *these* parts is not "preserved intact" in either Kane or Weber.

The difference between the Weber construction and the Kane construction in respect to the mounting of the armature-restoring spring or springs—the fact that in the Weber construction such spring is mounted on a support independent of the bracket which carries the magneto generator whereas in the Kane construction the springs are mounted upon the frame of the magneto and carried by its support—is due merely to the fact that Weber disclosed one old type of magneto and Kane disclosed another. There was no novelty whatever in Kane's "self-contained" type of magneto, in which the springs in question were mounted precisely as in Kane's construction. Such types of magneto are disclosed, for instance, in the Hennig patent, No. 916,312 (Figs. 2 3 and 4), and in the Milton patent, No. 1,053,107, the latter patent (the application for which was filed January 30, 1909), illustrating the commercial construction of magneto which was being employed by plaintiff prior to the design and adoption of the construction disclosed in the Kane patent.

If either the Hennig or Milton type of magneto were

mounted upon the ignitor block, as taught by Weber and as disclosed in his patent, we would have a full response to the terms, as well as the substance, of Kane's claims, and plaintiff's criticism of the Weber disclosure, now under discussion, would disappear. (Carter, Rec., 697, 698.)

Surely, in view of Weber's disclosure, it could not be held to constitute patentable invention to merely mount one old form of magneto, instead of another, upon the supporting shelf or bracket provided by Weber on the ignitor block for that purpose—particularly when such substitution of one old form of magneto for another would involve no change whatever in mode of operation or result accomplished.

We think the disclosure of the Weber patent amounts to a substantial anticipation of the claims of the Kane patent now under consideration, in and of itself, and without the assistance of any other prior art; but if the difference between the two in respect to the mounting of the armature-restoring spring can be held to be in any way material, such difference disappears when we consider the other common forms of magneto generators in the prior art which have been referred to.

It is to be further noted, in this connection, that claims 7 and 8 of the Kane patent, unlike all of the preceding claims of the patent, are broad and general with respect to their description of the parts that are to be mounted upon and carried by the ignitor plug, and can derive no support whatever from the particular form or character of the parts disclosed in the drawings and described in the specification.* Thus, with respect to the magneto generator, it is to comprise simply a "rotor and stator and generating winding." With respect to the electrodes, they are to be simply "a pair of relatively movable make-and-break spark electrodes adapted to be located

*Nor would they be infringed by defendant if so restricted, defendant's device being of different design and construction, in detail, from the Kane device and clearly not infringing any of the more limited claims of the Kane patent.

within an engine cylinder." With respect to the spring or springs for returning the armature to initial position after it has been moved therefrom and released, the claim simply calls for the employment of "spring means tending normally to hold said rotor in such position," which spring means may of course consist of a single spring, as in Weber, or a plurality of springs, as in Kane. The remaining parts or elements which are to be mounted on the unitary support carried by the ignitor plug are described broadly as "mechanism whereby the movement of the rotor effects the separation of said electrodes at a predetermined point in the movement of the rotor," which not only clearly includes the Weber mechanism in terms, but the Weber construction and the Kane construction in this respect are substantially identical. The remaining elements of claim 7 are "conductors for carrying electric current from said generating winding to said electrodes," which are of course present in Weber, "and engine driven means adapted to oscillate said rotor against the action of said spring means and then to release it," which means are substantially the same in mode of operation and result in both Weber and Kane.

As originally filed the specification of Kane's application contained the following statement (Vol. II., 506), respecting the scope of the invention:

> "While I have herein shown the invention applied to one specific form of generator or magneto and have to an extent shown and described the details of construction of such magneto or generator, it will be apparent that the invention may be applied by those skilled in the art to any type of magneto or generator whether of the oscillating type of armature or inductor or whether of the constantly rotating type of armature or inductor. It will also be apparent that the invention may equally be applied to magnetos or generators for furnishing electrical ignition whether the armature or moving part is of the wound type instead of the laminated metal or whether the field be of the ordinary form of winding."

And the specification of the patent as issued concludes with the statement:

> "While I have illustrated and described the preferred form of my invention, I do not desire to be limited to the precise details and arrangements set forth, but desire to avail myself of such variations and changes as may come within the scope of the appended claims."

Claim 8 is substantially the same as claim 7 in respect to the matters just considered, and it is therefore clear that unless the claims can be sustained broadly for the mere mounting of the magneto generator upon the ignitor plug they present no patentable novelty. We respectfully submit that, in view of the disclosure of the Weber patent, there was nothing novel in the broad idea of mounting the magneto generator upon the ignitor plug, and that the claims are substantially anticipated by that patent.

Wattles Patent No. 909,264.

This is another patent in the record disclosing the so-called "unitary" construction, in which the magneto generator is supported entirely by the ignitor plug. This fact so clearly appears from the drawings of the patent that no description or explanation seems necessary.

The International Harvester Company, for whose use plaintiff got up the construction disclosed in the Kane patent, was trying out the Wattles device at the same time, and Mr. Waterman of that company, called as plaintiff's witness, testified to the unitary construction of the device. Thus, at page 238 of the record he testified:

> "Q. How was that Wattles magneto fastened on the cylinder?
>
> A. It is a good while ago, but if I remember correctly—if my recollection is correct—the plug was removed completely from the engine, and the Wattles

magneto was inserted in its place. The plunger of the Wattles magneto was inserted in place of the plug.

Q. Is it not true, Mr. Waterman, as you now remember, that in that Wattles construction the magneto was mounted on the plug?

A. No, it was not mounted on the plug. No, sir. The plug, I am quite sure, was removed completely, and the Wattles magneto was inserted in the opening which was vacated by the plug; that is, the Wattles magneto was operated by the compression of the cylinder; a plunger was inserted in place of the plug.

Q. Now, disregard for a moment the manner in which the compression of the engine was operated. Is it not a fact that in the Wattles magneto the generator proper and the plug, with its electrodes, were connected together in one structure, and capable of being mounted on the engine as a whole, and taken off as a whole?

A. Yes, sir. *The Wattles magneto was a complete unit.*"

There is in evidence a Wattles magneto (Defendant's Exhibit Wattles Magneto No. 53) of slightly different form from that disclosed in the above patent but embodying the same "unitary" construction. (Rec., 702, 704.)

There was manifestly nothing broadly new, therefore, in the "unitary" idea of the Kane construction, and as that idea constitutes the sole novelty of the subject matter of claims 7 and 8 of the Kane patent, we submit that the claims are destitute of patentable novelty and invalid.

That the mounting of the magneto upon the ignitor plug or independently of it is a mere matter of choice or design and not of *invention* (as Mr. Kane testified he considered it at the time his application was filed) is further evidenced by the fact that the International Harvester Company, for whose use and because of whose complaints the "unitary" construction of the Milton and Kane patents was designed, largely abandoned such unitary construction after a few years' use of it and reverted to an independent

mounting of the magneto upon the engine cylinder and a connection of it with the movable electrode in the ignitor plug very similar to that employed by it with the original form of Milton magneto shown in Milton's patent, No. 1,053,107. (See testimony of Henry J. Cox, magneto superintendent of the International Harvester Company, at pages 713-14 and 719-720 of the record, and the cuts on page 6 of his company's catalogue, Defendant's Exhibit No. 51, produced by him and reproduced at page 745, Vol. III. of the Record.

CHAPTER C.

Milton, Not Kane, the Real Originator of the Subject Matter of the Claims in Controvery.

The proofs in support of Kane's claim to priority or originality, as against Milton's, are largely founded upon the so-called sketch (Plaintiff's Exhibit No. 17), which Kane claims to have made at his home on Sunday afternoon, April 11, 1909. In the absence of satisfactory and convincing proof that Kane made this sketch at the time and under the circumstances claimed, and that it was in fact an original sketch made for the purpose of placing on paper and disclosing original ideas of his own, rather than a copy or reproduction of a similar drawing already in existence, his whole case falls to the ground, for there is nothing in the remaining evidence produced in his behalf that is in any way inconsistent with Milton's claim and testimony to the effect that all that Kane did was done under Milton's immediate direction and supervision and was a mere carrying out of his ideas and instructions. The additional drawing (Plaintiff's Exhibit No. 18) which Kane claims to have made and completed within a few days following the making of the sketch at his home on Sunday afternoon was admittedly made at the Webster plant in the regular course of work, and, excepting for Kane's unsup-

ported denial of the fact, may well have been made under Milton's immediate direction and instruction and with his assistance, as Milton claims.

Moreover, the construction disclosed in the latter drawing, Exhibit No. 18, is very different, indeed, from anything disclosed in or suggested by the sketch Exhibit No. 17. It is not a mere working out and more complete disclosure of ideas incompletely and imperfectly disclosed in the sketch, but is a disclosure of a very different construction, and one which is, in many respects, inconsistent with the disclosure of the sketch. Practically the only feature in which the two constructions have anything in common is that in both the magneto is shown as supported upon the ignitor block or plug.

Moreover, the so-called sketch, Exhibit No. 17, does not disclose the subject matter of a single one of the claims of Kane's original application, nor the subject matter of a single one of the claims of his divisional application; nor, indeed, the subject matter of any of the claims of his patent as issued, unless, possibly, in a vague way, the subject matter of claims 7 and 8, it not being clear (and the record not otherwise showing) whether the magneto-supporting member in the sketch is formed integrally with the plug or separately therefrom and bolted thereto by the same bolts which secure the plug to the engine cylinder, in which latter event it would be subject to the same criticism which plaintiff offers (without warrant, we think) to the construction disclosed in the Weber patent heretofore considered.

Kane's story (Rec., Vol. I., p. 244) is that Mr. Webster came to him and told him of the troubles they were having with the Milton magneto, and asked him if he could not do something to remedy them; that his father spoke to him on the same subject the following morning (Sunday) and that on the afternoon of the same day he sat down and made the sketch in question and showed it to his father; that the next morning (Monday) he showed it to Mr. Webster and the two went to the office of the Harvester Com-

pany and showed it to Mr. Cavanaugh; that immediately thereafter, the same afternoon, he set about making the drawing, Complainant's Exhibit No. 18; and that this was followed up immediately with the building of a sample magneto, which was completed within a couple of weeks and tried out and found satisfactory—all without Mr. Milton having anything whatever to do with the matter, excepting to offer a criticism of Kane's second drawing when Kane showed it to him.

The whole story is highly improbable, and we think incredible, when the positions and relations of the parties and the attendant circumstances are considered; and it bears evidence of its falsity.

In the first place, with respect to the so-called sketch Exhibit No. 17; Kane calls this a "rough sketch," but it very much more like a *tracing*, on tracing paper, of a scale or dimension drawing, and traced from such a drawing. It is clearly not a "study" or "layout" drawing, such as a draftsman endeavoring to place on paper a new idea invariably makes. It bears little evidence of any alteration—any erasures and repenciling—in the course of its evolution, as invariably occurs in the working out of any new ideas upon paper, but on the contrary appears to be a clean, clear-cut, unaltered tracing of a well-defined previously made drawing.

It is not only not a sketch, or a study or layout drawing of a new idea, but it is not made upon paper which would have permitted of the erasures and alterations usually incident to such drawings. On the contrary, it is made upon tracing paper such as draftsmen never use for such purpose, but solely for such purposes as those described by the draftsman Kroeplin, on page 681 of the record. Kane was a draftsman (had graduated from Lewis Institute) and he would never have attempted to work out an original sketch or study drawing on any such paper. He offers no explanation whatever as to why he happened to have this tracing paper at his home, and no drawing paper or other paper more suitable for his purpose.

Furthermore, the so-called sketch appears to have been made to scale, or to have been traced from a scale or dimension drawing, and it will be noted that the magneto is turned up into what is referred to in the record as "vertical" position in order to clear the carburetor of the engine shown immediately at the left of the magneto*—an arrangement different from that employed either with the old Milton magneto or in the drawing of April 14th (Exhibt No. 18) and the magnetos following it. Now, if Kane's story is true—if he just sat down that afternoon and on the spur of the moment sketched off his new and original design, as he claims he did (Rec., 244, 272)—he had no drawing or other data before him from which to get the dimensions and relations of the parts, which is further evidence, we think, of the fact that Exhibit No. 17 was not made as an original sketch of a new design, but was either traced from an existing drawing or made with knowledge of such a drawing.

The ignitor opening in the wall of the cylinder and the carburetor referred to were in fixed and unchangeable relation to each other, so that to mount his magneto on the ignitor plug, and at the same time clear the carburetor, the magneto in Exhibit No. 17 had to be placed in vertical position. When the further drawing, No. 18, was worked out, however, the axis of the armature shaft was shifted away to the right, as compared with Exhibit No. 17, and the other parts correspondingly relocated in the new and very different design disclosed in this drawing, so that the magneto could be mounted in horizontal position, as shown, and as was always done in practice with the magnetos thereafter built.

The exhibit sketch thus bears inherent evidence that it was not made at the time and in the manner described by Kane, but was traced or reproduced from a previously made drawing; and it is altogether more reasonable to believe that it was traced from some study drawing or sketch which had been developed at the Webster plant, un-

*See cuts of engine, Vol. II., pp. 13, 15, 17.

der Milton's direction, as claimed by the latter, than that it was an original sketch made by Kane at his home on that Sunday afternoon, as he claims. If not actually traced from some previously made drawing, it was evidently made with such knowledge of an existing drawing that the draftsman was able to place it directly on paper without alteration of any kind.*

The only corroboration whatever of Kane's claim to having made Exhibit No. 17 as an original sketch at his home on the Sunday afternoon in question is the tesimony of his father, Maurice Kane, and when the testimony of the latter is analyzed it will be found to fall far short of any distinct corroboration of his son's claim to having made the exhibit as an original sketch at the time and under the circumstances described. The fact that young Kane had the tracing in question at his home on that Sunday afternoon and showed it to his father, as the latter testified, need not be denied or questioned; but that it was an original sketch, made then and there, as a study or layout of original ideas, and not a tracing made elsewhere from a previously made drawing, or at least made with knowledge of a similar existing drawing, is far from established by anything that Mr. Kane, Sr., says:

Thus, being examined by plaintiff's counsel respecting the troubles experienced by the International Harvester Company with the old Milton magneto, he testified (Rec., 295):

> "Q. Now, did you ever have any talk with your son Joe about doing anything, or anything that he had done to overcome these troubles in the early equipment?
>
> A. I did, sir. The complaints were so many that I called his attention to it, and said that unless something was done, from the reports that we had, we would have to quit—

*As hereinafter shown, it corresponds very much more closely to a design that Chiville had previously worked out at the Webster plant under Milton's direction (Vol. II., 576) than it does to the drawing Exhibit No. 18 and the magnetos built after the latter.

Q. Have to quit what?

A. Quit putting those out, those magnetos.

Q. Now, what developed as the result of that conversation between you and Joe?

A. I asked Joe why he did not do something at the factory to remedy that, and I remember very well he said, well, that was not his part of the business.

Q. Now, did he talk with you at any time later about anything he had done to overcome the troubles and the difficulties?

A. No, but at that particular time, he went to work right away to make drawings.

Q. How did you know that?

A. He showed them to me.

Q. What did he say about them, or what did you say, at the time those drawing were shown to you?

A. Well, I really did not know very much about them, but I asked him to submit those to Mr. Webster, which he did.

Q. I will ask you to look at this paper, marked Plaintiff's Exhibit No. 17, and ask you whether you recognize or can identify it?

(Exhibit 17 shown witness).

A. Yes, sir; that looks like the drawing that he showed me.

Q. Did he afterward show you other drawings relating to the same general subject matter?

A. I do not remember seeing anything else except this original drawing, that he made at home.

Q. Did you see him at work on this drawing?

A. Oh, yes.

Q. Did he talk with you, or explain to you what this drawing showed, or what his idea was in making it?

A. I think he did, in a general way, but I do not think he went into details.

Q. Can you recall and can you state now what he said to you about this drawing, or what it showed, at that time?

A. Yes; I remember the change that he said he made, mounting it on the spark plug, or whatever you call it, instead of on the side of the engine, that that was his plan.

Q. What else did he say about his plan, or about the drawing?

A. I do not think he went into details with me at all, sir."

And at pages 304-305, on cross-examination:

"Q. I understood you to say, Mr. Kane, that when your son produced this drawing—or you saw him making the drawing?

A. Yes, sir.

Q. That Sunday afternoon, in the house. Did you ask him what he was doing, while he was making that drawing?

A. Why, I do not remember, sir, but I presume I did. At least I knew what he was doing.

Q. Did he tell you?

A. Yes, undoubtedly. I saw him at work.

Q. Don't you know whether he did or not? You have no recollection?

A. Oh, no.

Q. You say he did not explain to you that drawing in detail at that time?

A. I am quite sure he did not, sir. I would not understand it very well, if he did, so there would not be any—

Q. Why wouldn't you understand it?

A. Because I did not know much about the engine business, or the magneto.

Q. Didn't you know enough about the engine business and the magneto to be able to read a drawing when it was shown to you, and understand, with the aid of his explanation, what it was all about?

A. Oh, I think I would, sir.

Q. Yes.

A. Yes.

Q. You did not take enough interest in what your son was doing to find out in detail what was shown in that drawing, did you?

A. No, sir, I did not know enough about it to take very much interest in it."

And on page 306:

"Q. So you did not know what the structure was that he illustrated in the drawing on that date, on that Sunday afternoon that he made it?

A. Only in a general way, sir.

Q. Well, what way? What did you know about it?

A. That he was trying to remedy the difficulties we were having with the magneto that we were then using.

Q. And you did not ask him how he did that, or remedied that difficulty, did you?

A. Oh, I presume I did, but I do not remember just now the—

Q. Now, when did you first learn what you now say your son had done on that Sunday afternoon, in detail, and with regard to what it was that he had done? How soon after that did you learn about it?

A. I really do not know, sir. I could not tell you.

Q. Well, can't you give me some idea about how soon it was? I do not ask you for the precise time.

A. I know they went to work at it right away, I remember that, and produced the magneto, and as I have already stated, I saw it in operation."

And on page 307:

"Q. Do you have now any present recollection as to when it was when you first learned what your son had done on that Sunday afternoon in detail?

A. No, I could not state, sir, exactly when that--

Q. I am not asking you to state it exactly, and I will say again, now, can you state it approximately or as near as you can? And if you have no recollection, you can say so.

A. I know that the thing was adopted, and very soon after this first drawing was made.

Q. That is what you said before. Pardon me.

A. That they started in to make patterns, and the complete magneto was produced very soon after.

Q. Now, I am not asking you as to when they adopted it, or when it was adopted by the International Harvester Company, but when did you first learn, as near as you can now state, what it was that your son had done, on this Sunday afternoon, in detail?

A. I do not think, sir, that I ever went into it in detail at all.

Q. Well, how far did you go into it?
A. Oh, just in general way, looking it over.
Q. What do you mean, by 'general way'? How much did you learn about it, when you looked it over in a general way?
A. Well, I could see that it was attached to the engine.
Q. Is that all?
A. —Different from the other.
Q. Different than the other?
A. Yes, sir.
Q. Is that all you ever learned about it?
A. Substantially."

And at pages 310-311:

"Q. Didn't you know anything more about this supposed invention of Joe's at the time you went to the patent lawyer, than that it had something to do with the way of fastening the magneto to the plug on the engine?
A. That is the only thing that I remember, sir.
Q. And that is all the knowledge you had of this invention of Joe's, when you went to see the patent attorneys with him?
A. I think that is substantially right."*

* * * * *

"Q. Now, don't let us get confused. Let us see if we get it straight: so that at the time you went to see the patent lawyers with Joe, all you knew about this invention was that it was a means or some way of securing the magneto and plug to the engine; that is right, isn't it?
A. That was the general idea that I had.
Q. And that was all you had?
A. No, I wouldn't be sure of that.
Q. What more did you have?
A. I don't remember anything more than that.
Q. When did you next see this drawing, Exhibit 17—is that it—after you saw it on Sunday afternoon when your son was making it: when did you next see it?

*It will be remembered that this feature of Kane's alleged invention was not mentioned in the patent application that was prepared as a result of this interview.

A. I think it was when they had the interference case up, sir; I have no recollection of seeing it at any other time.

Q. Did you look at this drawing with any degree of care on that Sunday morning when he showed it to you?

A. No.

Q. You just looked at it casually, did you?

A. Just in a general way, that is all, sir."

Mr. Kane never saw the drawing, Exhibit No. 18, which his son made at the Webster plant a few days later (Rec., 273), but he saw the first magneto that was built in accordance with the new design (whether Milton's or his son's) and witnessed the first test of it on an engine, as he naturally would at the head of the experimental department of the Harvester Company regardless of his relation to his son, and doubtless saw many subsequent magnetos of the same construction, and his testimony throughout shows that he was assuming, from this later knowledge of the magnetos, that they were the same in construction as that shown in his son's sketch, Exhibit 17, whereas, as a matter of fact, they were very different, as heretofore pointed out. Thus, at pages 297-298 of the record, he testified:

"Q. Did you see presently an equipment made in conformity with Joe Kane's drawing or plans, as he discussed them with you?

A. Yes. Sometime later I saw the magneto made in conformity with those drawings in operation at the Webster factory.

Q. What do you mean, when you saw it in operation?

A. According to the memorandum here (indicating book) I saw that on May 13, 1909.

Q. What memorandum do you refer to? Will you read it?

A. It is headed 'Magnetos: The late style put on a 6-horse power worked well. Will not work on a

hopper cooled. Will have to be redesigned to fit hopper cooled.' "*

At page 299 of the record he testified respecting the trip he made to Milwaukee with his son, at the time the latter went up to the Harvester Company with the first of the new magnetos, as follows:

"Q. You heard the testimony, did you about your having been in Milwaukee, and having seen Mr. Waterman, with the magneto equipment of Joe's invention?

A. Yes, sir; I heard that testimony.

Q. Did you recall being in Milwaukee for some such purpose?

A. I do, sir. I remember going there with Joe.

Q. Now, how did you happen to go?

A. I have some other matters to look after at the time, and Joe told me he was going. So I arranged that we would go together.

Q. Did you see Mr. Waterman there with Joe?

A. Yes, sir.

Q. What was said at the time of that meeting?

A. I do not remember, sir, what the conversation was.

Q. What did it relate to?

A. The fact that Joe had a sample magneto with him that he wanted tried out.

Q. Did you see that sample, at the time?

A. Yes, sir.

Q. Can you describe it? What was that sample?

A. It was the same as indicated by the drawings that I referred to.

Q. What drawings, Mr. Kane?

A. These drawings that he made at home, when he said he was going to change."

As hereinafter shown, Mr. Milton was in the habit of sending young Kane to Milwaukee, with new or improved

*This statement in Mr. Kane's diary was erroneous, since it was the design shown in the sketch Exhibit No. 17 (in which the magneto was set vertically), that could not be used on the hopper cooled engine, and not the magneto as actually built in accordance with Exhibit No. 18.

magnetos to be tried out, as Kane himself admits (Rec., 260-263) so that there was no significance whatever in his having been sent there on this occasion. The matter for present consideration, however, is that Mr. Kane, Sr., describes the magneto which his son took to Milwaukee as being "the same as indicated by the drawing" that his son had shown him at home on that Sunday afternoon; whereas the entire record upon the point shows that the magneto in question, and those following it, all conformed to the very different drawing which young Kane worked out (under Milton's direction according to the later's claim) at the Webster plant following the alleged making of the sketch at his home, such later drawing constituting Plaintiff's Exhibit No. 18. Mr. Milton explained in his testimony (Rec., 533) the construction shown in the Kane tracing, Exhibit No. 17, and a very similar but slightly different construction which he says preceded it, and pointed out the objections to them which led to the working out of the different design shown in the drawing, Exhibit No. 18.

As will be clear from the foregoing, we think, the testimony of Mr. Kane, Sr., wholly fails to corroborate his son's testimony as to the making of Exhibit No. 17 as an original "rough sketch" at his home on the Sunday afternoon in question with sufficient definiteness and positiveness to establish such fact, or to overcome the presumption, arising from the character of the drawing itself, that it was not so made but was exactly what it appears to be, and what Milton says it is (Rec., 533), a tracing made from a previously prepared drawing—presumably a study drawing which had been worked out at the Webster plant in the course of the evolution of the improved design of the Milton magneto.

If doubt be once thrown upon young Kane's claim to having made Exhibit No. 17 as an original sketch of his own ideas at his home on the Sunday afternoon in question, the remainder of the testimony introduced on his behalf wholly fails to establish his claim to inventorship or originality, for it is all entirely consistent with the theory

that the new design was worked out by a process of evolution, in the Webster plant and under Milton's immediate direction, as Milton claims.

Thus, there is nothing in the testimony of Mr. Munn, the next witness called on behalf of Kane, and who claims to have made the first magneto from the drawing, Exhibit No. 18, that is inconsistent with Milton's claim to have originated the improved design and that it was developed under his direction. Munn was an assistant of Milton's in the magneto department. Being asked regarding the form of magneto now in controversy, he testified (Rec., 318):

"Q. Will you state what you know about that apparatus, how it first came to your attention, under what circumstances and what followed?

A. Before it was manufactured or afterward?

Q. Before it was manufactured.

A. Before it was manufactured—E. J. Kane came to me one day and said that he thought he could get up a magneto and plug in which the magneto was mounted directly on the plug, doing away with the trouble we were having with magnetos in the field, with the old construction. I told him that he would better go ahead and make that up; better make up drawings and I would make up a plug from these drawings; and we would try it out.

Q. You told him that, did you?

A. I told him that, yes, sir.

Q. What happened then?

A. That was in the early part of 1908, I should say.

Q. I say, then what happened?

A. Then what happened?

Q. Yes, sir.

A. One day—he made up the drawings and I got the patterns made from the drawings, and got castings from the foundry, and machined up the castings, and made the plug according to the drawing.

Q. After you had made one up what was done with it?

A. We placed it on the Harvester engine which had been placed at our disposal and tried it out.

Q. Where was that done?

A. That was done on what we call the fifth floor of the new building of the old factory out at 15th and Western avenue.

Q. Of the Webster Manufacturing Company?

A. Yes, sir.

Q. Did you make up more than one of those samples?

A. I only remember the one.

Q. Did you have anything to do with the subsequent manufacture of an equipment of that general character?

A. I think not."

The witness does not claim to have ever seen Kane's tracing, Exhibit No. 17—in fact, states that he does not think he ever saw it (Rec., 320), which is rather strange in view of his previous conversation with Kane and the latter's alleged exhibition of the drawings to numerous persons the day after he claims to have made it, but with respect to the drawing, Exhibit No. 18, he testifies (Rec. 319):

"Q. You say that Kane made a drawing from which you made the first sample?

A. Yes, sir.

Q. Did you see that drawing?

A. Yes, sir.

Q. While it was being made?

A. While it was being made.

Q. Who was making it?

A. Mr. E. J. Kane himself.

Q. Where did you see him doing that?

A. On the fifth floor of the new building in the old plant.

Q. I call your attention to the paper which has been offered in evidence as Plaintiff's Exhibit 17, and ask you whether you recognize that or can identify that.

A. I don't think I have ever seen this, but I cannot state positively.

Q. I call your attention now to a paper which

has been marked Plaintiff's Exhibit 18, and ask you whether you recognize or can identify that.

A. To the best of my knowledge it is his drawing, that was made by E. J. Kane at that time.

Q. And the one upon which you saw him at work?

A. Yes, sir.

Q. Did you have any talk with Kane about the machinery disclosed in this drawing at the time you was working on the drawing?

A. Why, we was discussing it from time to time as he drew it up.

Q. What did you say—he or you?

A. I can't remember any particular conversation. I may have offered some suggestions as to the details of it for manufacture.

Q. Do you understand drawings? Are you capable of reading them?

A. Yes, sir.

Q. So that you know what that drawing shows?

A. Yes, sir.

Q. Did you know at that time?

A. Yes, sir.

Q. How did the machine which you say you made, the sample machine, compare with the machine as shown in this drawing, Plaintiff's Exhibit 18?

A. As I recollect it, when it was finished it was identical with the drawing. I think there were no changes made."

Mr. Munn refers to the tests which were made in the first magneto on an engine and says (Rec., 324):

"Q. What did you do with it when you had finished with it?

A. I think it was left on the engine, if I recollect rightly, and that is so far as I had anything to do with it.

Q. Did you put it on the engine yourself, or assist in doing so?

A. I am quite sure I did. I think Mr. Kane and I put it on together.

Q. Which Mr. Kane is that?

A. Mr. E. J. Kane.

Q. Now, do you know whether the Webster Company, after this first sample had been made and tested, as you have described, whether they then manufactured equipment conforming with the sample?

A. Yes, sir.

Q. When did they begin that manufacture, if you know?

A. Why, I would say within, say, two or three months, maybe after that first sample was made up.

Q. How long did it take you after Kane had finished the drawing and turned it over to you to make up this first sample?

A. I would say it was finished within three weeks.

Q. How soon did the test follow its completion?

A. Immediately."

At page 327 Mr. Munn states that, so far as he was aware, no one other than Mr. Kane had anything to do with the making of the drawing, and no one other than he and Mr. Munn and the latter's workmen with the building of the first magneto.

Mr. Munn was a partisan witness, in plaintiff's employ, but even so there is nothing in the facts to which he testifies that is in any way inconsistent with Mr. Milton's claim that the new magneto was developed under his direction and was an embodiment of his ideas. The record shows (p. 604) that when the question of originality between Kane and Milton first arose Mr. Munn expressed the opinion that Mr. Milton was the inventor or originator of the improved design, and that he later changed his views in accordance with the testimony which he subsequently gave on behalf of Kane. The very beginning of his cross-examination indicates the character of his testimony. The record shows that Mr. Milton had entire charge of the magneto department and business of the Webster Company, and that Mr. Munn was his assistant. Mr. Milton's testimony is to the effect that he was in intimate and daily contact with everything that was being done in the effort to improve the design of his magneto, but Mr. Munn testifies on cross-examination as follows (Rec., 328):

"Q. Did you say that Mr. Milton was your superior?

A. My immediate superior, yes, sir.

Q. The one to whom you reported and from whom you receive instruction, is that right?

A. Yes, sir.

Q. You have not said anything about Mr. Milton in connection with the work that was done in connection with this magneto, have you?

A. I have not.

Q. Why not?

A. Because at that time Mr. Milton's attention was occupied by something else, to the exclusion of everything else.

Q. Absolutely to the exclusion of everything else?

A. Absolutely to the exclusion of everything else.

Q. You never told him a thing about this at all?

A. Not a thing.

Q. And he was your immediate superior in the company?

A. He was my immediate superior in the company.

Q. This was a very important matter, wasn't it?

A. It was not as important as other things that we had in the fire at that time.

Q. It was a very important matter, wasn't it?

A. It was quite important, yes, sir.

Q. And it was quite seriously important, wasn't it?

A. Yes, sir."

And further, on page 329, referring to Exhibits 17 and 18:

"Q. Do you know whether Mr. Milton ever saw either one of those drawings, or not?

A. I rather doubt whether he ever did.

Q. You rather doubt it. Now, why do you rather doubt it?

A. Because Mr. Milton was away a great part of the time.

Q. He was away?

A. Yes.

Q. How frequently was he away from, say, January 1, 1909, until August 1, 1909?

A. Very probably away half the time."

Now, the record shows, by documentary proofs that cannot be questioned, that these statements of Munn respecting both the devotion of Milton's entire attention to something else and to his alleged absence from home during the period in question, were without foundation. Indeed, Kane himself testifies (Rec., 282-283) that Milton was "in and about the factory premises" throughout the period in question, and was absent only infrequently—perhaps "a couple of times a month." He also testified that he showed the drawing, Exhibit No. 18, to Mr. Milton soon after it was completed—a matter hereinafter discussed, as well as the documentary proofs above referred to.

Mr. Milton's own testimony respecting his absences from home during the period in question is found at page 550 of the record and reads as follows:

"Q. Now, during this period from when this development began, to the time that you made the suggestion to Mr. Kane, that is, in making drawings in accordance with your instructions, and along through to the completion of the work, were you out of town very much during that period, at that period?

A. At that particular period, or, from a period starting in advance of that, the end of December, on 'till I went to Europe, which was in August, I spent very little time away from Chicago, and I make that statement unreservedly, because I was married in December, the previous year, and my wife was a stranger here in town, she having come from the same town I did, Louisville, Kentucky, and objected very seriously to being left here alone; and Mr. Webster had given me Mr. Chiville to help me on the high tension work, not only to expedite the matter, but to help me, to enable me, to spend more time here in Chicago; and Mr. Kane was delegated to me similarly, on low tension work."

There was no other witness besides Kane and his father who claimed to know or was in a position to know anything about the alleged making of Exhibit No. 17 by Kane on the Sunday afternoon in question, and there was nothing whatever in the testimony of any of the other witnesses in any way inconsistent with the presumption that the exhibit was in fact a tracing which Kane had made from a previously worked out study drawing at the Webster plant and taken home to show to his father. No other witness, we believe, excepting Mr. Webster, and he has no distinct recollection of it, claimed to have ever seen the exhibit in question—not even Mr. Munn. We shall have occasion to discuss Mr. Webster's testimony at a later point.

Let us now consider young Kane's testimony, and determine whether it is of such a character that his unsupported and uncorroborated assertion that he made Exhibit No. 17 as an original sketch at his home on the Sunday afternoon in qustion can be accepted as sufficient and satisfactory proof of that fact, and as overcoming the contrary presumption arising from the character of the exhibit itself. On at least two points Kane's testimony shows upon its face that it is unreliable. The first is with respect to his exhibition of the drawing, Exhibit No. 18, to Milton and the alleged criticism of it offered by the latter. After stating (Rec., 265) that he did not show Exhibit No. 17 to Milton, but that he showed Exhibit No. 18 to him at Mr. Webster's direction or suggestion (Rec., 262) he testified at page 267, as follows:

> "Q. You knew Mr. Milton had had a good deal to do with the development of this apparatus, as chief engineer of the company, and up to the time that you made that drawing* as your superior from whom you received instructions? You knew he had had a good deal to do with the development as far as it had then progressed, good, bad, or indifferent, isn't that true?
>
> A. Yes, sir.

*Exhibit No. 17.

Q. Well, don't you think it would have been quite natural to have shown to him what you had devised along that line?

A. I do not know whether it was natural or not. I am pretty sure I didn't.

Q. Now, Mr. Kane, did you at any time talk with him about this?

A. About this one? (Indicating.)

Q. Oh, this invention which you say you made at that time.

A. I talked with him about this drawing after I made it (indicating).

Q. How soon after?

A. I talked with him right after I showed it to Mr. Webster.

Q. What was the substance of that conversation?

A. Why, I took this drawing to him, and, if I recollect rightly, he was sitting at his desk down on the main floor in the general offices of the Webster factory, and I spread it out before him, and I think I asked his opinion of it. Mr. Milton looked it over and he said, well he said 'I do not think that is going to work.' I said 'Why not?' 'Why,' he said, 'you have got the ignitor finger pointing upward on a direct push of the magneto rod and,' he says, 'that is going to place it out of time so that it won't trip at the right time.'

The Court: The witness is referring to Plaintiff's Exhibit 18.

Mr. Bulkley: I should have said that.

Q. That is what you talked with Mr. Milton about when you showed him that drawing?

A. Yes, sir.

Q. Is that all you talked with him about?

A. As near as I can recollect, that is about all that was said, except I said that I was sure it would work."

Now, the further cross-examination of Mr. Kane, on pages 268-270, clearly shows that there was nothing whatever on the drawing, Exhibit 18, which he showed to Mr. Milton which could possibly have furnished the basis of any such criticism. Without quoting the entire cross-ex-

amination on this point we call attention to the following at the bottom of page 269:

> "Q. How did Mr. Milton know that it was going to act any differently from that which he had embodied in the old mechanism?
>
> A. I do not know how he knew.
>
> Q. He couldn't know from this drawing, could he? (No answer.)
>
> Q. You can answer the question or not. If it is embarrassing to you, I will withdraw it.
>
> A. I do not know whether he did or not."

And further, on page 270, toward the bottom:

> "Q. Oh, Mr. Kane, if you will just permit me a minute; I didn't ask you anything about that. I ask you now, if you will remember, to look at this drawing.
>
> A. Yes, sir.
>
> Q. And to tell me what there is shown on that drawing which would lead Mr. Milton or anybody else to suppose for a minute that it would operate any differently, in respect to the thrust-rod actuating mechanism, than it did in the old magneto arrangement of Mr. Milton. Now, tell us what there is on that drawing.
>
> A. *On this drawing there isn't anything.*"

Another portion of Mr. Kane's cross-examination on the pages in question (bottom of 268 and top of 269) is so inconsistent with his claim to having originated the new design at the time in question and under the circumstances disclosed by the record as to be simply incredible. Thus, referring to Mr. Milton's criticism above mentioned, he testified:

> "Q. And that is what you talked about on that occasion, was it, in connection with that drawing?
>
> A. Yes, sir.
>
> Q. And that is all that was said?
>
> A. Yes, sir.

Q. You just simply showed him that drawing?

A. Yes, sir.

Q. And told him that there was something you had?

A. Yes, sir.

Q. And then he made that answer?

A. Well, he, of course, looked it over a little bit; studied it.

Q. Yes, but that is all he said, was it?

A. Yes, sir.

Q. *And you didn't talk anything about this plug and magneto arrangement, did you?*

A. *No, sir.*"

In view of the fact that the "plug and magneto arrangement"—the so-called unitary construction—was the great thing which Kane now claims to have invented or designed at that time, and in which everyone was intensely interested, and which was the sole feature of his invention disclosed to his father, it is manifestly incredible that if it had in fact been something new and original with Kane, at the time he showed the drawing, Exhibit No. 18, to Milton, it should not have attracted the latter's attention, and that neither of them should have mentioned it.

Mr. Milton's testimony respecting Kane's claimed exhibition of the drawing, Exhibit 18, to him will be found at pages 577, 578 of the record.

The other of the two points on which it seems to us that Kane's testimony clearly shows the unreliability of his statements, in his claim that he was so exclusively the originator of the new or improved design of the Milton magneto that he did not even know that anyone else was working on the problem. According to Mr. Webster's testimony the one thing which he most distinctly remembers respecting the troubles encountered with the old Milton magneto and the effort to relieve them was that he took the troubles and their solution up with Mr. Kane and Mr. Chiville at the same time and in the presence

of each other, and asked them to independently work on the matter, and stated that he would give a prize to the one who worked out the best design. Mr. Kane flatly denies any knowledge or recollection of this incident. Thus, in the course of his direct examination (Rec., 244) describing how he came to work out his new design and make Exhibit 17, he said:

> "And along some time later than that I was upstairs, I think, on the fifth floor and Mr. Webster came up and asked me if I had any ideas or suggestions, or if there was anything that I could do to help him out in this situation. I told him I thought I could. That was, if I remember rightly, on a Saturday. I went home and the next day my father, Mr. Maurice Kane, sort of brought the proposition up and he said that the Harvester Company had pretty nearly come to a point that they were going to abandon the use of that magneto, unless somebody got busy and did something to overcome the trouble. I then sat down—I had a few drawing tools at home—and I made a sort of rough sketch which showed the magneto mounted on an extension of the ignitor plug. This sketch I showed to my father when I got it done, and we talked over it and we decided to take it down and show it to Mr. Webster. The next day I took it down and showed it to Mr. Webster, and Mr. Webster thought it a good idea."

On cross-examination, concerning the same incident, he testified (Rec., 264-265):

> "Q. Now, when you had a talk with Mr. Webster, as you say, did he say that he had enlisted the efforts of anybody else except you to help him out?
>
> A. You mean on this work?
>
> Q. On this invention which you are now claiming as having been made by you.
>
> A. You mean the time Mr. Webster—
>
> Q. Let me put this to you, put a more definite and clearer question. Mr. Kane, you have testified, as I understand it, that Mr. Webster came to you and

said that he was having trouble with the form of magneto which was then being made and sold, and that the Harvester Company wouldn't have it any more, and that you had got to do something, and he asked you to help him out, is that right?

A. Yes, sir.

Q. Yes. Now, when was that? What month of 1909 was that when you had that conversation with Mr. Webster?

A. That was in April, 1909.

Q. Well, what part of the month, as near as you can remember?

A. As near as I can remember it, it was the day before I made this drawing.

Q. The day before?

A. Yes, sir.

Q. Did he tell you that he had asked or enlisted the help of somebody else other than you?

A. No, sir, he did not.

Q. Didn't say anything about that to you at all?

A. No, sir."

And further, on page 283:

"Q. Do you know anything about a design which was made by Chiville in an effort to improve the troubles that existed in the old Milton arrangement, at or about that time?

A. No, sir, I do not.

Q. You never heard anything about his having made an effort along that line, as well as yourself?

A. Well, I think Mr. Chiville did some work for Mr. Milton, on those two previous attachments that were taken to Milwaukee.

Q. But that is all you know about it?

A. Yes, sir.

Q. You do not know anything about Mr. Webster having asked Mr. Chiville as well as yourself to get up something that would relieve these difficulties? You do not know anything about that, do you?

A. No, sir, I do not.

Q. You did not see any design which Mr. Chiville had gotten up in connection with the same subject matter with which you were working; is that right?

You did not see any design which he had gotten up at or about that time?

A. No, sir.

Q. You did not make any comparison with him of a design by him and your own design?

A. No, sir, I made no comparison. ."*

Now, let us see what Mr. Webster and Mr. Chiville say. Here is Mr. Webster's version of the matter, under examination of his own counsel (Rec., 345-346):

"Q. Now, when you learned of the complaints and objections and practically the decision of the Harvester people not to use this equipment further, what did you do about the matter?

A. Why, I remember calling both Mr. Kane and Mr. Chiville, and saying, 'Here'—

Mr. Bulkley: Which Mr. Kane?

A. Mr. Joe Kane and Mr. Chiville. And if I remember right, I offered them a prize for the man that would get up the best design for this improvement.

Mr. Williams: Q. What did you say?

A. That is what I said. Do you want me to repeat my language, as near as I can?

Q. Why, the substance of it, if you do not remember the exact words. Did you say anything to them, for example, about the troubles, or about loss of business, or anything relating to the subject? If so, what did you say, as nearly as you can remember?

A. Well, I do not pretend to remember a conversation back nine years, but I know this: I may have said to them, 'We are in trouble here with this, and we have got to do something.' I presume possibly I did, but I remember distinctly saying: 'Why, bring down a new design here; I offer a prize for a new design,' to these two men.

Q. Now, did you (they) do anything, so far as you know, toward endeavoring to get up a machine?

A. Yes.

Q. —which would overcome the difficulties?

*And yet he admits (Rec., 251) that Chiville came up and saw *his* design, Exhibit No. 17.

A. Yes, they brought the design down, if I remember rightly, very quickly. I imagine it was on a Monday. Of course I am not sure about the date; but it was very soon after this, anyway, they both brought in a design, Mr. Chiville and Mr. Kane.

Q. In what form were those designs?

A. Well, I do not remember.

Q. I mean did they bring apparatus?

A. Oh, no.

Q. —or drawings or—

A. Not apparatus. Of course it must have been drawings. I do not remember. But I do remember distinctly that we decided—I say 'we'—I suppose I put it up to our engineers, as I always did, in that kind of a case; and Mr. Kane's design was accepted as much the better. Mr. Chiville himself said it was much the best."

On cross-examination (Rec., 361) Mr. Webster further testified:

"Q. You say you selected Mr. Kane and Mr. Chiville to enter into competition with one another to produce a design to overcome the defects in your product concerning which the International Company had complained; is that right?

A. Yes, sir.

Q. And you offered them a prize?

A. Yes, sir.

Q. For the best one?

A. Yes, sir.

Q. Did you give Mr. Kane any prize?

A. I do not think so.

Q. Now, you say you referred to your engineers these two designs, to see which one was the better of the two; is that right?

A. I think my testimony was that I probably showed to them; but I haven't any definite recollection of that.

Q. But you think you did?

A. Yes, sir.

Q. Now, to whom did you refer it?

A. I do not know.

Q. Well, what engineers did you have there at that time?

A. We had probably two or three engineers.

Q. Who?

A. Well, there was the engineer of the Webster Manufacturing Company.

Q. Who was that?

A. Well, it may have been Mr. Perkins, of the company.

Q. Did you look upon Mr. Perkins as an engineer?

A. Yes, sir.

Q. Of the company?

A. Yes, sir.

Q. What other engineer did you have at that time?

A. We may have shown it to our chief draftsman: I do not know.

Q. Who was that?

A. I do not remember, at that time.

Q. You do not remember his name?

A. No, sir.

Q. You have no recollection, in connection with the submission of this design to any of them?

A. No, I have not.

Q. But you do remember now that you went to Mr. Chiville and to Mr. Munn?

A. No, Mr. Chiville.

Q. To Mr. Kane?

A. Mr. Chiville.

Q. I beg your pardon.

A. And Mr. Kane, yes.

Q. And that you asked them to produce a design?

A. Yes, sir.

Q. How do you remember that so clearly?

A. Why, I do not know whether you can say why one thing fastens on your brain.

Q. Well, I am asking you: if you say you haven't any way of ascertaining—

A. —Well, I say I do know positively that I went up there and spoke to those two men, and said, 'Here, now, we have got to get up something'; and as I say, I think I offered them a prize, yes, sir."

And again, at page 687 of the record, being recalled on rebuttal, Mr. Webster further testified, referring to a statement in an affidavit of Mr. Chiville, as follows:

> "I certainly did not speak anything about a unitary design. I know the whole thought in my mind was at that time that here was rather a desperate situation, and Kane had been out on the road and seen the troubles. Mr. Chiville was working in that department; and I remember distinctly going up there, and saying, 'Now, here, boys, I will offer a prize for the best design to remedy these troubles.'"

Mr. Webster had also testified some years earlier, in the Kane-Milton interference, respecting the same matter, as follows (Ex. Bk., 440-441):

> "Q. 11. Please state as near as you can the circumstances surrounding the development of this self-contained type of ignition apparatus to which you have referred.
>
> A. It having been called to my attention, the defects of the magneto which was located by means of a stud or attached to a stud on a cylinder, I called in two of our draftsmen and employees, Mr. Gerald Chiville, and Mr. E. J. Kane and suggested that they draw up an improved design which would overcome the defects in the other design. When these two gentlemen presented their ideas a short time afterwards the design invented by Mr. Kane was manifestly superior to all the others and we adopted the same. The design submitted by Mr. Kane was of the self-contained type to which I have referred in a previous answer."

Chiville was not called as a witness by either party at the trial below, the record showing that he was somewhere in California, but in the interference between Kane and Milton, plaintiff's present counsel introduced in evidence on behalf of Kane an affidavit of Chiville which plaintiff's counsel had previously prepared, and stipulated with himself, as heretofore pointed out, that it might be used

with the same force and effect as if Chiville were called and examined, and was so considered by the examiner of interferences in his opinion. This affidavit forms part of the Kane-Milton interference record in evidence here, and is printed at pages 445-447 of the exhibit book. Regarding the incident now under consideration, Mr. Chiville said (page 446):

> "In the spring of 1909 Mr. T. K. Webster, Sr., the president of the company, asked Mr. Kane and me to see if we could not design some unitary structure by which the spark plug carrying the contacts and also the inductor generator could be mounted together on a single support, so that they could be removed from the engine and replaced without affecting the adjustment between them. I recall that Mr. Webster told Mr. Kane and me to take a few days off from our other work, if necessary, and work independently of each other on this design at home.
> * * *
>
> A few days later Mr. Kane and I both submitted our designs. I produced a design with the magneto supported above the plug, but my design was rejected. Mr. Kane submitted a drawing showing a construction in which the magneto was supported out beyond the end of the plug by a bracket or bearing integral with the spark plug. The inductor shaft carried a yoke having an arm to be struck by a rod driven by the engine, thus tripping the inductor which was returned to normal position by springs secured to the yoke. An arm on the movable contact shaft carried an adjustable screw which was struck by the curved surface of one arm of the yoke when the yoke snapped back. A light spring tended to hold this adjustable screw in contact with the yoke."*

Now, notwithstanding this testimony of Mr. Webster and Mr. Chiville, Kane testified, as we have seen, that he did not know that Mr. Webster had submitted the problem to

*Of course this could not have been the design shown in Exhibit No. 17, for that does not disclose the "yoke" and other parts referred to.

anyone else, or that anyone else was working on it at the time he got up his new design.

Equally incredible is Mr. Kane's testimony on cross-examination at pages 284-285 of the record as follows:

> "Q. Now, during these months after you had made this first drawing, up to the time when you had finally developed that which was to be delivered to the Harvester Company, you had no talk with Mr. Milton about it, did you?
>
> A. No, sir.
>
> Q. And you do not know whether Mr. Munn had any talk with Mr. Milton or not?
>
> A. No, sir, I do not.
>
> Q. And so you undertook, yourself, to develop, perfect, and give to the Webster Company that which was to constitute its product, to be sold to the International Harvester Company, without any consultation with its chief engineer; is that right?
>
> A. Yes, sir."

So far as the record shows, Kane never invented or designed anything before in his life, and has never done so since,† but this radically new design of the Milton magneto sprang full fledged from his Jovian brain that Sunday afternoon—he just sat down, as he says, and sketched it right off—and he followed it up with working drawings and the building and testing of a magneto without any conference with Mr. Milton, and, according to his story, almost without his knowledge.

It appears from Mr. Milton's testimony (Rec., 526, 551) that at the time this newly designed magneto was gotten up the Webster Company did not have in its possession a gas engine suitable for testing it, and both his testimony and Mr. Kane's shows that the International Harvester Company supplied them with an engine for that

---

†Milton, on the other hand, as the record shows, was a prolific inventor in this very line both before and afterward—plaintiff's counsel had himself prepared nearly a dozen applications for Milton (Rec., 586) and the Official Gazette shows that patents continued to issue to him in large numbers in the succeeding years.

purpose. Mr. Kane's testimony upon that point is found at page 244 of the record, where, after stating that he showed his sketch," Exhibit 17) to Mr. Webster the day after it was made, he testified:

> "That same afternoon, if I remember rightly, we took it over to the general offices of the International Harvester Company and showed it to Mr. Cavanaugh, who was assistant general manager in the experimental department. Mr. Cavanaugh looked at the sketch and said he thought we had made a real improvement, and to help us to put this thing actually in metal he immediately shipped us a six horsepower engine. I then went back to the factory of the Webster Manufacturing Company and started to make a working drawing embodying this idea. This drawing was made a few days later and then we immediately started to make up various pieces to make that attachment to put on a six horsepower engine."

According to Mr. Kane's testimony, Mr. Milton had nothing to do with the matter, and none of Kane's witnesses mention Mr. Milton as having been present at the test which was later made of the new magneto on the engine in question. Let us see what the documentary evidence in the case shows. At page 337 of the exhibit book is printed a letter written by Mr. Webster to Mr. Milton from the Union League Club on April 16, 1909, just as Mr. Webster was leaving for New York, and reading as follows:

> "DEAR MILTON:
>
> My. Tyson telephoned that the International would send an engine over to our place—I wish you would arrange to take a/c of stock of material on hand May 1st, also complete list and prices of tools in your Igniter Dept.—Please write me at N. Y., 88 Reade St., how the small sized magneto carries on—if you get a good spark?
>
> T. K. W."

This letter was written, it will be noted, just two days after Mr. Kane claims to have completed the drawing, Exhibit No. 18, which is dated April 14, 1909. If Mr. Milton was having nothing to do with the development of the new design at that time—if he knew practically nothing about it—how did it happen that Mr. Webster was advising *him* that the Harvester Company would send over an engine on which to test it? Why did he not advise Kane, who claims (Rec., 265) that after the making of his first drawing and the exhibition of it to Mr. Webster he worked independently of Mr. Milton, and not under his direction and supervision as before.

Mr. Milton's testimony regarding the engine is found at page 551 of the record, and reads as follows:

> "As this unitary structure commenced to take form, and hold out considerable promise, I wanted to test it out, as soon as we had it convenient, and I asked Mr. Webster if he could not get for me an engine; and that letter simply shows that he had done as I had asked him to. It was a Harvester engine, a horizontal engine."

On May 1, 1909, Mr. Webster who was then in New York on a second trip, wrote Mr. Milton the letter appearing at page 338 of the exhibit book, and reading as follows:

> "DEAR JOHN:
>
> Had a very interesting interview with Mr. Hill of 'Fairbanks.' Also interviewed the Prest. Mr. Wells —Mr. Haddock—and two of their foreign representatives. If the attachment of the ‡‡ magneto proves out all right on Field B, they will put it on all their engines. They will have Bates & Edmonds send one of their engines to put the spring type on— The other style back of flywheel was so hard to start that they have not been selling any. We must follow up both of them as soon as possible.
>
> Yours truly.
>
> T. K. WEBSTER,
> *Pres.*"

A week later, on May 8, 1909, Mr. Webster wrote from New York the further letter to Mr. Milton appearing at page 340 of the exhibit book, the first paragraph of which reads:

> "I wish you would advise me just how you are getting on with the smaller type of magneto, and also if you have done anything further in developing the coil."

Answering this and another letter of Mr. Webster's of the same date (Ex. Bk., 341) Mr. Milton wrote him the letter dated May 10, 1909, and appearing at the bottom of page 341 and top of page 342 of the exhibit book, and reading as follows:

> "DEAR MR. WEBSTER:
>
> I have your two letters of the 8th instant and in reply thereto desire to state that we have ordered dies for the smaller type of low tension magneto which is to be used on the Harvester work. The smaller type magneto for jump-spark work has been necessarily side-tracked for the various interruptions. Just prior to taking our inventory we had to concentrate our attention on getting the equiment ready for Mr. Chiville. The inventory was a serious interruption and since then we have been very busy attending to the Harvester Company's demands. They have gotten intensely impatient, telephoning several times a day as well as telegraphing us from Milwaukee. This has all been supplemented by many letters so you can readily see why we have concentrated our attention to this live business. We expect to make shipment today that will satisfy their immediate demands, which will allow us to go back to the high tension magneto tomorrow. I have done nothing further on the completion of the small high tension coil.
>
> I am pleased to note from your various communications that the magneto is working satisfactorily.
>
> Yours very truly,
>
> JNO. L. MILTON."

As appears from these letters, and from other parts of the record, Mr. Milton was working on both high tension and low tension magnetos, and there was one of each kind that might be designated the small or "smaller type" of magneto, while the "coil" referred to was something entirely different; but there can be no doubt whatever that "the smaller type of low tension magneto which is to be used on the Harvester work," which Mr. Milton refers to in his letter, and for which he says "we have ordered dies," was the newly designed low tension magneto here in controversy.

Mr. Webster's letter of April 29, 1909, to the Harvester Company (Vol. II., p. 2) shows that the first magneto had been completed and tested out on the Harvester Company's engine prior to that date, for in the letter he enclosed a photograph of the engine and magneto, which he refers to in the letter and which he identified in his testimony as being the photograph constituting Plaintiff's Exhibit No. 5 and reproduced at page 5. Mr. Webster says in his letter of April 29, 1909:

> "I enclose herewith photographs of the Harvester 6-H. P. Engine, with the latest attachment, which we are sure will suit all interested in this propositon. As already stated, we have covered all the points of objection very properly registered by Mr. H. A. Waterman.
>
> First, as regards the rigidity, we have attached the magneto now by two 5/8" bolts, which have an ultimate strain of 40,000 ‡‡ and a safe working strain, (namely a factor of safety of 6), 3600 ‡‡ for the two bolts and we have only a strain of 35 ‡‡ against this. We are sure you will be satisfied on the point of rigidity.
>
> Second, we control this with the exhaust rod so you only spark when there is a charge in the cylinder.
>
> Third, we have made the magneto smaller, so we believe now that we have got exactly what we have all been working for.
>
> I am going to New York this afternoon to be gone

a week or ten days, and I trust by the time I get back we can settle this question so that we can get your orders in sufficient quantities to ship promptly and to put it on a manufacturing basis."

It was while in New York on this trip that Mr. Webster wrote Mr. Milton the two letters of May 8th, heretofore referred to, to which Mr. Milton replied by his letter of May 10th which has been quoted. Mr. Milton testified respecting this letter of May 10th at pages 556-558 of the record, and identified the "low tension magneto which is to be used on the Harvester work" as the newly designed magneto here in controversy. On cross-examination (Rec., 623-631) plaintiff's counsel made a strenuous effort to show that the impatient communications of the Harvester Company, referred to in the letter, could not have related to this newly designed magneto, because it was not at that time in production; but the Harvester people were thoroughly familiar with it by that time, had seen it tested on the engine at the Webster Company's plant, after which the magneto had been sent to Milwaukee for test by the Harvester people there, and they might well have been impatient regarding it, and desirious of having additional samples of it for test purposes or otherwise, in view of the trouble which they had experienced with the old design. It is immaterial, however, whether their impatient demands related to the new magneto, or whether the "shipment today that will satisfy their immediate demands," referred to in Mr. Milton's letter, was of the new magneto or not, for there can be no question that "the smaller type of low tension magneto which is to be used on the Harvester work" mentioned in the early part of Mr. Milton's letter, and for which he states "we have ordered dies," was the newly designed device, and the letter shows that Mr. Milton was at this date, as at all other times during the period of its development, in close touch with it, the assertions of Mr. Kane to the contrary notwithstanding.

On May 22, 1909 (Vol. II., 343-344) Mr. Webster wrote Mr. Milton a further letter from New York in which he said:

> **"Am glad to know that the Harvester magneto has been expressed."**

—evidently referring to the newly designed magneto, as stated by Mr. Milton at page 560 of the record, where he says that Mr. Webster desired a sample of the magneto sent to him at New York for exhibition to some people there.

On October 25, 1909, Mr. Webster wrote Mr. Milton (then in Europe) the letter appearing at page 345 of Vol. II., in which, after referring to the trouble which the Harvester Company reported as having had in their foreign trade with the old type of Milton magneto, and to the fact that none of the new type had recently been sent over by the Harvester Company to their representative, Mr. Webster said:

> **"I think if you wish to retain the foreign trade for the Milton magneto it would be well for you to go over to Hamburg and see Mr. W. V. Couchman."**

Mr. Milton acknowledges the receipt of this letter on November 10, 1909 (Vol. II., 346), in which he said:

> **"On my return to London this morning I find a letter from you under date of Oct. 25th.**
>
> **I wish to thank you for same, and in connection with this matter desire to state that I have today written Mr. Couchman at Hamburg regarding my calling on him.**
>
> **I trust that the Milwaukee Works are not having any further trouble with attachments for magnetos. I have felt a certain amount of uneasiness regarding their making these attachments correctly, due to the fact that they made the old style ones with very bad workmanship, which I believe is the principal trouble that Mr. Couchman is experiencing now."**

The record shows elsewhere ((pp. 564, 565) that before going abroad, in August, 1909, Mr. Milton had had a complete set of tools or dies made in this country for the manufacture of the newly designed magneto abroad, and that upon arriving in England he at once placed its manufacture with a concern there, and also applied for the British patent which has been heretofore referred to. He owned the foreign rights to his inventions, whereas he was under contract with the Webster Company respecting his American rights to them; and as hereinafter shown, the delay in filing his American application uopn the newly designed magneto was due to this situation and the indecision of Mr. Webster himself respecting it. (Vol. II., 472; Rec., Vol. I., 565).

As will be clear from the foregoing documentary proofs, we think, quite aside from Mr. Milton's own positive testimony hereinafter referred to, he was, contrary to Mr. Kane's testimony, in close touch with every step of the development of the newly designed magneto from its inception until it got into commercial production in both this country and abroad;* while with respect to the suggestion and contention on the part of plaintiff, that he was devoting himself exclusively to high tension magnetos, his letters to Mr. Webster prove exactly the contrary, and that the work on them gave way to work on the low tension magneto for the Harvester Company. Mr. Milton testifies on this point, at page 551 of the record, as follows:

> "But I know that the low tension machine was always of more interest to me, because, as I stated before, I thought that that was the machine that was going to give us our first business, and I thought I knew a great deal more about it than I did the jump-spark machine."

The record shows, by Mr. Webster's own testimony,

*There is nothing in Mr. Webster's testimony to the contrary. Indeed, his testimony affirmatively shows that Mr. Milton was in charge of the new development, as the correspondence quoted indicates.

that it was he, rather than Mr. Milton, who was so excited and enthusiastic about the high tension or jump-spark magneto for automobiles, as indicated by the correspondence between them which has been referred to.

Mr. Kane testified (Rec., 284) that he made the detail working drawings from which the newly designed magnetos were subsequently manufactured—among other places, at page 284 of the record, as follows:

> "Q. And this work of development went on, this device was embodied in this drawing, Exhibit 18—and may I interpolate to ask you if other drawings or working drawings were made of it at any time by the Webster Company?
>
> A. Yes, sir.
>
> Q. They were?
>
> A. Detailed drawings were made.
>
> Q. And those working drawings were made by Mr. Munn, and you and he discussed it together, did you not?
>
> A. The working drawings were not made by Mr. Munn.
>
> Q. Who were they made by?
>
> A. I made the working drawings.
>
> Q. Yes. Did you discuss—
>
> Mr. Williams: Made by whom?
>
> A. I made the working drawings.
>
> Mr. Bulkley: Q. Did you discuss those working drawings with Mr. Munn, and talk with him about it?
>
> (No Answer).
>
> Q. Do you understand my question, or is it vague?
>
> A. Yes, sir, your question is all right.
>
> Q. Yes?
>
> A. I am trying to think—
>
> Q. All right.
>
> A. —if there was any discussions. No, sir, there was very little discussion with Mr. Munn on the working drawings. They were made practically just as the big drawing there shows."

The testimony of Milton (Rec., 535, 537) and of the

draftsman, Kroeplin (Rec., 680), on the contrary, shows that the detail working drawings were made by Kroeplin, and there is produced and in evidence a large blue print of them (Defendant's Exhibit No. 21), dated June 3, 1909, identified by Kroeplin, and entitled "Details of Type B-2 *Milton Magneto* for I. H. Co. 6-8 & 10 H. P. Horizontal Engine." As explained by Kroeplin (and also by Milton) the exhibit blue print was a print made from a tracing which had in turn been made from an assemblage of detail drawings which had been previously made and used in the shop for the manufacture of the parts. Thus at page 680 of the record:

> "Asked whether he remembered anything about the making of separate figures, or detailed figures on separate sheets, which were given to the workmen, the witness said he remembered making details for brackets and other castings for the machine on paper, Manila paper drawings, which were turned over to the pattern maker from which he made patterns. They were usually mounted on a board and shellacked in order to preserve them. When the various parts had been completed by the workmen the drawings would be brought to the drafting room and tracings would be made from them, and they would be all assembled together and one tracing made of the whole mechanism."

And further, at page 681:

> "Being shown Exhibit No. 15 and asked if he remembered having seen any such a machine at the time he was making the figures of the drawing, Exhibit No. 21, witness said he did not remember the complete machine, but remembered parts such as the spring, the rods to which the springs were fastened, the bracket—the brass casting connecting the two magnets —and the laminated bars; nothing else. Asked if at various times or frequently he did drafting work in accordance with the instructions of Mr. Milton, witness said he made the details in accordance with Mr. Milton's instructions, and never received instructions from

anyone else to make drawings in connection with magneto work. Being asked to describe the usual way in which a draftsman goes to work to make a design and embody it in a drawing, witness said the customary way is to first make a pencil layout on manila paper, and if the layout is satisfactory a tracing is made from it on tracing paper and blue prints made from the tracing. Being asked whether draftsmen ever employed any other kind of paper or tracing cloth than that which witness had described, witness testified as follows:

"My experience has always been that working with some complicated mechanism if, after you had the pencil arrangement on your manila drawing, and you wanted to see different movements of certain parts, you would take what was called tracing paper, place it over the drawing, sketch off your parts from that, and if there were different movements that that machine would make you would move this paper to show the different movements. I remember doing that in connection with this magneto work. For instance, taking the details of the inductor, showing the different arrangements and movements of it by making a sketch or laying tracing paper over the drawing and moving this paper around.

The Court: Q. I do not understand yet where you get your object from which you make your manila sketch. Is that from a drawing also?

A. The manila paper sketch is made from the ideas, which in this case were given to me by Mr. Milton.

Q. Well, given to you on paper?

A. On ordinary free-hand sketch paper.

The Court: Yes.

Mr. Bulkley: Q. Mr. Kroeplin, did you ever get any instructions from anybody else other than Milton in connection with what work you had to do in the making of figures or drawings—the figures of Exhibit 21 or in the making of Exhibits 17, 18, 19 and 21?

A. I had no instructions from anyone else.'"

Mr. Milton's testimony regarding the same matter is found at page 545 of the record, where he says:

"A. We followed our regular routine on that, which was to make drawings on regular drawing paper, and shellac them or put a clear varnish on them, to protect them while the mechanics were handling them. And then these drawings go to the shop, and after the pieces were finished, and any changes noted on them, then we would make our tracings from those drawings.

Q. Are you telling me now what you would do?

A. That is what we did as a regular thing, and I do not recall having changed it for this particular development.

Q. How were those drawings prepared? Were they with all of the details on one sheet, or how?

A. Each part was detailed on a separate sheet.

Q. And then what was finally done?

A. And then, as I said, those drawings were assembled, after the corrections were made on them, and traced on the one sheet.

Q. Now, why was that plan pursued, of making separate detailed sheets?

A. To expedite the production of the samples, the models."

At page 551 he further testified regarding the same matter as follows:

"Q. Now, after you had completed the work, or after the general study work, and designing, had been completed, then what next did you do after you had your various parts made, and your entire tracing completed?

A. Well, there was a stage ahead of that. The detail drawings were made, and put in the shop, and the parts made, and the machine was assembled, and then it was—

Q. That is, before the complete tracing?

A. Oh, yes.

Q. Embodying all the—views?

A. Yes.

Q. The machine was made?

A. Yes; the machine was tried before the tracing was made. Then we put it on the engine, and tested it, ran it.

Q. Now, point out among these various exhibits here one of those completed engines as it was completed, before you had the tracing in its entirety made and tried out on the engine.

A. Well, that is difficult to do right now, because I do not believe there are any models there that represent that machine as it was first made; there are some that would carry the idea exactly; there is the one you have your hand on (indicating) and the model, Exhibit 15, this side of it—they carry the idea generally, almost the complete idea.

Q. What were the differences, if any; could you tell, in a general way?

A. Why, the difference, one difference particularly, the first one we made did not have the automatic cut-out feature on it, which these have. That was applied to the first engine of which we have photographs. It was a separate device, and later it was incorporated into this design, as is shown here. I would say that was the principal difference. Another big difference—I will not say 'big' difference—it was an important difference—was in the yoke; the first yoke was a forging, made up of four pieces.

Q. Now, keep your voice up on this, so that we can get it.

A. There was a main body, that had two pins driven into it, and riveted over. That gives three pieces. And the fourth piece was a little steel insert, and, these, we used a malleable iron casting, with the steel insert riveted into it, which brought us to two pieces. That was just another evidence of the development."*

Kane testifies (Rec., 244-245) that he placed the date, April 11, 1909, on the sketch, Exhibit No. 17, at the time it was completed on that Sunday afternoon "Because it is a habit of mine to date all these drawings," but it does not appear that he ever had occasion to date a drawing

*Kane nowhere mentions this development of the yoke in his testimony, but on the contrary seeks to give the impression that in the drawing, Exhibit No. 18, and in all of the magnetos made following it the yoke was exactly as shown in his and Milton's patents. No yoke was present in the construction disclosed in Exhibit No. 17.

before or afterward, excepting the Exhibit No. 18, which bears the date April 14, 1909. At another place in his testimony (Rec., 245) he says he placed the date on the sketch, Exhibit 17, at the suggestion of his father, who told him "Always date your drawings and sign them." Such advice might well have been expected from a man of long experience in connection with inventions and patents, as Mr. Kane, Sr., was (Rec., 303, 304), but the surprising thing is that, in view of such experience, Mr. Kane, Sr., did not himself sign the drawing, as a witness. On cross-examination, referring to what his son had said about his father telling him to date and sign the drawing, Mr. Kane, Sr., testified: "I would be very apt to do that from what I knew of the patent business" (Rec., 314), but being asked why he did not himself witness the drawing, he said, "I don't know, sir. I don't remember just—," while admitting that it would have been "a much better precaution to preserve his rights" if he had witnessed it.

It appears throughout the record—from the testimony of all of the witnesses on both sides—that the most serious objection to the old Milton magneto was its insecure attachment to the cylinder of the engine, such attachment consisting in mounting the magneto upon a cylindrical "boss" projecting from the side of the cylinder and securing it with a set-screw. The drawing, Defendant's Exhibit No. 16 (Vol. II., 741) was introduced for the purpose of showing this boss, where it is so marked. This boss was never intended for any such purpose, or to support a considerable weight of any kind, but was merely a mounting for an anti-friction roller which formed a bearing for the reciprocating rod that operated the movable electrode of the igniter that had been employed with battery ignition. (See cut of engine on page 17 of Vol. II.) This boss was not only poorly adapted, by reason of its shape and character, to the support of the magneto, but it was not strong enough to support it, and sometimes broke off. Moreover, it was formed on the outer

shell or water jacket only of the cylinder, which was comparatively thin, and the record shows that when it was broken off it would sometimes tear away part of such jacket with it. Mr. Kane himself testifies regarding this boss, and the trouble which the mounting of the old magneto on it caused, as follows (Rec., 243):

> "Of course, one of the great troubles with that old type of attachment was that it was a heavy weight supported on a very small boss which was never intended to support any such weight. * * *
>
> That boss was originally intended to support a small roller, I would say, a couple of inches in diameter, and there was a half inch rod worked over the top of this roller and there was a very little strain on it. * * * It was something left over as a matter of prior engine design, this boss."

Mr. Milton testifies regarding the boss in question and the difficulties encountered with it, at page 514 of the record, as follows:

> "A. This wall of the cylinder, the outer wall, was rather thin. Between it and the main cylinder wall was a space which was for carrying the water for cooling the engine. That would vary in thickness and in strength as all gray iron castings do.
>
> Q. Well, what broke the wall, the outer wall? Why did that wall break?
>
> A. It broke as a result of these extra strains that were put on it. This little boss primarily was arranged to carry a little roller, and only a light roller over which was guided the pusher rod for working the make and break electrode of the sparking plug which is mounted at the back, at the closed end of the cylinder.
>
> Q. In that case what kind of ignition was it?
>
> A. That was battery ignition.
>
> Q. That is, this boss was primarily intended to simply support a light rod passing, an anti-friction roller, over which this light rod passed?
>
> A. That is what I attempted to describe."

In his report of March 15, 1909, on the old Milton magneto (Vol. II., 1), on which plaintiff lays much stress, Mr. Waterman, of the Harvester Company, referred to the mounting of the Milton magneto on this boss of the engine cylinder as follows:

> "The entire outfit is more heavy and more bulky in general form and construction than desirable, if not than necessary, the new igniter, including bracket, weighing about 25 pounds. The Milton magneto equipped for operation as erected regularly at Milwaukee, has required a strain of about 25 pounds on the cylinder-boss. The size of this boss cannot be altered without interfering with engine repairs."

And in his letter of April 6, 1909, to Mr. Kane, Sr. (Vol. II., 335-336), Mr. Waterman said:

> "Work is under way perfecting the durability of the Wattles magneto, *and considering some better means of attaching the Milton magneto to engine.*"

Mr. Webster also testified upon the same subject, at page 348 of the record, as follows:

> "It was extremely vital to the interests of the Webster Manufacturing Company that we make good on this magneto. Now, on the practical side, one of the great difficulties was the attachment. * * * Now, the thing that impressed me about this whole business was that we had got to attach it in a substantial manner. The next thing was, we had got to make it smaller; it was too big."

And further, at pages 364-365:

> "Q. Do you have any recollection now, Mr. Webster, as to where the defects were in the means by which the magneto was attached to the cylinder?
>
> A. In the original Milton?
>
> Q. Yes, in the original Milton.

A. Well, the original Milton, as I remember it, was attached to a boss on the engine.

Q. And it was the weakness of this boss, was it—

A. No.

Q. —which constituted the defect?

A. No. The boss was small; the Harvester Company did not want to change their design, and we had to adapt it the best we could, and we were allowed to put it on a boss.

Q. Now, I am trying to get from you what knowledge you now have.

A. Yes.

Q. Or recollection, concerning this defect.

A. Yes.

Q. Now, will you tell me to just what specific extent you have now a knowledge of that defect?

A. It was an imperfect way of attaching it.

Q. This boss was an imperfect way?

A. No; the way we could get onto the boss and hold it was so imperfect.

Q. What do you mean by 'get onto the boss and hold it'?

A. Attach it to the boss."

Now, notwithstanding this testimony of Mr. Webster, showing that the great objection to the old Milton magneto was its insecure attachment to the engine, and the fact that he testified repeatedly, as we have heretofore shown, that he put the problem of remedying the trouble and overcoming the difficulty up to Kane and Chiville jointly, and offered a prize for the best design, Kane not only testifies, as we have seen, that he knew nothing about Chiville or anyone else having been asked to work on the problem, but he testifies (Rec., 275), that Mr. Webster never said anything to him about improving the means of attachment of the magneto to the engine, although this was what he thought was the great feature of the new design, and the only feature of it concerning which he spoke to his father. Thus:

"Q. What was the most important thing that you and your father discussed, and Mr. Webster discussed, Mr. Kane?

A. I and my father discussed largely the means of fastening the magneto onto the engine.

Q. Yes. And that was the thing in connection with which Mr. Webster had asked you to help him out, wasn't it?

A. No, sir.

Q. What? Didn't Mr. Webster ask you to help him out in connection with the means of fastening the magneto and the plug to the engine?

A. *No, sir, he did not.*

Q. He didn't discuss that at all with you prior to the time that you filed your application?

A. He did prior to the time we filed the application.

Q. Well, when was it he discussed that with you?

A. Discussed that with me when I showed him the drawing."

It is of course incredible that Mr. Webster should have been so impressed with the difficulty of securely attaching the old magneto to the engine, and should have gone to both Kane and Chiville and appealed to them to find some solution of the difficulty, *without ever discussing and mentioning the actual trouble itself.* Indeed, Kane squarely contradicts himself at a later point in his testimony, where he says (Rec., 276-277):

"Q. Now, to go back, you say Mr. Webster had a talk with you about the difficulties arising in connection with the old Milton magneto, is that right? We will go slow, now, Mr. Kane, so as to have ample time to answer and not to confuse.

A. All right. I thank you. As I stated before, Mr. Webster come up to me and said the situation was serious; *that they had to have some better means of attaching the magneto*, or something had to be done, and wanted to know if I could offer any suggestions or help him.

Q. In reference to what did he want you to do something?

A. *In reference to any new attachment.*

Q. Well, what new attachment?

A. Any new attachment that I could make to help him, or anything.

Q. Well, what did he tell you was the trouble he wanted you to remedy, if it was possible for you so to do?

A. As near as I can recollect, he didn't make any attempt to specify what the troubles were.

Q. Did he tell you anything about any particular part of the apparatus?

A. No, sir.

Q. —that he wanted you to direct your attention to in order to cure the evil?

A. No, sir, he did not.

Q. Didn't you know what he was talking about when he spoke of the troubles and difficulties that had arisen in connection with the apparatus of the old Milton type sold to the International Harvester Company?

A. Yes, sir, I had a good idea.

Q. You had a good idea. And what was that idea?

A. *Well, the magneto was insecurely mounted on the engine.*"

Kane's testimony respecting what happened at the interview with his patent attorney, when he determined to apply for a patent some seven or eight months later, is equally incredible. Thus, at page 274 of the record he says:

"Q. Now, you haven't yet told me what it was that you described to Mr. Sprinkle as your invention when you went there to take this patent out.

A. If I remember right, we took one of these old pamphlets illustrating the old way of fastening it onto the engine, and I also took an illustration, a blue print, I think, showing the new attachment, and I said, 'Here is the way we used to do it, and here is the way I have done it. You get a patent on it.'

Q. And he said he would, is that right, or he would try to?

A. He said he would try to."

We have heretofore shown that, at another place in his testimony, Kane testified that he told his attorney that the *automatic cut-out* was the most important feature of his new invention (Rec., 275, 277, 278) and that he did not consider the combined plug and bracket as involving any invention at all (Rec., 281), but the inconsistencies between these statements and that quoted above are no greater than that between the quoted statement and what the patent attorney actually did in pursuance of his alleged instruction. He said he showed the patent attorney how they formerly attached the magneto to the engine, and his improved method of doing it, and told him to get a patent on the latter—but the application which the patent attorney prepared and filed pursuant to this instruction, and which Kane read and swore to (Rec., 278), did not adequately disclose this feature of his alleged invention, did not contain a single claim addressed to it, nor the slightest indication that it constituted any part of the invention intended to be patented.

Kane testifies, as we have seen (Rec., 244), that he showed his sketch, Exhibit No. 17, to Mr. Webster on the following day after he made it, and that he and Mr. Webster took it to the general offices of the International Harvester Company that same afternoon and showed it to Mr. Cavanaugh, assistant general manager of the experimental department; and that after receiving Mr. Cavanaugh's approval of his design he went back to the plant of the Webster Company and began making working drawings, which resulted in the production of the drawing, Exhibit No. 18, a few days later.

Now, this exhibition of the sketch to Mr. Webster and the visit of Mr. Webster and Mr. Kane to the offices of the Harvester Company and their exhibition of the sketch to Mr. Cavanaugh occurred on Monday, April 12, 1909, according to Kane's story; and Mr. Cavanaugh was the assistant to Kane's father, who was at the head of the experimental department of the Harvester Company. Yet

Kane, Sr., produced a memorandum book (Rec., 296-297) from which he testified as follows:

> "Q. Now, by reference to that book, or to any other circumstances, will you state as nearly as you can when it was that your son, Joe, first showed you and talked with you about this drawing, which you have identified, this Plaintiff's Exhibit No. 17?
>
> A. I have got the memorandum book of 1909 right here, and the first memorandum here in reference to the magneto is April 14, 1909, and it says, 'Cavanaugh: Joe has worked out a much simpler attachment of magneto to engine.' Cavanaugh, by the way, was my assistant in the experimental department, and was looking after that class of work, that is, engines and magnetos and all that stuff.
>
> Q. Who made this entry you have just read from your memorandum book?
>
> A. I made it myself, sir.
>
> Q. When did you make that?
>
> A. April 14th.
>
> Q. What was the purpose of your making that entry?
>
> A. *So as to call Mr. Cavanaugh's attention to it.*
>
> Q. Did you do that?
>
> A. Yes, sir.
>
> Q. What did you say to Mr. Cavanaugh?
>
> A. Substantially what this memorandum refers to."

According to young Kane's testimony, he and Mr. Webster had shown his sketch to Cavanaugh two days earlier, on April 12, 1909, and must have done so if his story about returning to the Webster plant and completing the drawing, Exhibit No. 18, on April 14, 1909 (the date it bears) is true. It is of course incredible that Kane, Sr., should not have known anything about the exhibition of the sketch to Cavanaugh on Monday, April 12th, in view of his interest in the matter and his testimony regarding the events of Sunday and Monday. His memorandum is therefore entirely inconsistent with his son's story.

His memorandum book seems to be unreliable in other respects as well, for at the bottom of page 297 and top of page 298 of the record he testifies from it that he saw the newly designed magneto (presumably for the first time) in operation on an engine at the Webster factory on May 13, 1909, and testifies that he made the entry on the day. His own testimony and that of his son and Mr. Webster all show that as soon as the first magneto was completed and put on an engine for test, the Harvester people, including Mr. Kane, Sr., and others interested, came over and saw it in operation; and the documentary evidence in the record (Mr. Webster's letter of April 29, 1909, and accompanying photograph, Exhibit Book 2, 5) show that the magneto had been completed and placed on the engine and tested, and a photograph taken of it, at least as early as that date, whereas according to the memorandum book of Mr. Kane, Sr., he saw the magneto for the first time two weeks later.

Mr. Kane's memorandum book is also in error in what it says with reference to the magneto which he saw tested on the engine, for it states that it "will not work on a hopper cooled—will have to be redesigned to fit hopper cooled," whereas, as heretofore stated, it was the design shown in his son's alleged sketch, Exhibit No. 17, that would not work on a hopper cooled engine and would have to be revised and redesigned to fit such an engine, and not the design shown in the drawing, Exhibit No. 18, which was followed in all of the magnetos that were constructed.

Mr. Kane did not produce his memorandum book at the time he testified in the Kane-Milton interference, his explanation now given (Rec., 302) being that he did not think of it at that time. His testimony in the interference will be found at pages 433-437 of Vol. II.

Kane's testimony, heretofore referred to, to the effect that immediately after showing the sketch, Exhibit No. 17, to Mr. Cavanaugh, on Monday, April 12, 1909, he returned to the Webster plant to take up the work of making working drawings, and by Wednesday, April

14th, had completed the drawing, Exhibit No. 18, is about as incredible as some of his other statements which have been discussed—not that the work could not have been accomplished within that time, but that Kane did it himself, alone and unaided and without any suggestions or assistance from others, and as a mere matter of working out and developing the design shown in Exhibit No. 17. As heretofore noted, and as will at once be apparent upon inspection of the two drawings, the two designs are very different, indeed, and have nothing in common excepting the mere fact that in both instances the magneto is supported (but in very different ways) upon the ignitor block or plug. Thus, in Exhibit No. 17, the magneto is set vertically, while in No. 18 it is set horizontally. In No. 17 the armature shaft has a trip finger projecting to the right from it and co-operating with a bell-crank whose opposite arm is connected with the push rod operated by the engine shaft. In Exhibit No. 18 the push rod co-operates directly with the trip finger on the armature shaft, the bell-crank is dispensed with, and the push rod is supported upon a roller and provided with a cam surface to disengage it from the trip finger. In Exhibit No. 17 the movable electrode is operated by contact of a short lug projecting to the left from the armature shaft with a screw carried by an arm upon the movable electrode. In Exhibit No. 18 there is provided a yoke-member having two opposing arms, one of which co-operates with an adjustable screw carried by the arm on the movable electrode, and each of which is provided with a pin projecting parallel with the armature shaft and having the end of one of the armature springs connected to it. There is no such yoke, or anything resembling it, in Exhibit No. 17. In Exhibit No. 17 the armature shaft is in axial line with the right-hand portion of the flange of the ignitor plug, thus setting the entire magneto over so far to the left that, in order to clear the carburetor heretofore referred to, the magneto had to be placed in vertical position. In Exhibit No. 18 the axis of the armature shaft is shifted to

the right, entirely beyond the line of the flange of the ignitor plug, thus shifting the center of the magneto itself in that direction and to that extent, so that the magneto could be turned to horizontal position.

Is it reasonable to believe that, starting with the sketch or tracing, Exhibit No. 17, and merely carrying out and developing the latter, as he says he did, Kane should have worked out the entirely different design of Exhibit No. 18 between Monday afternoon and Wednesday? Is it not altogether more reasonable to assume that Exhibit No. 18 was a wholly independent drawing, having no connection with Exhibit No. 17—"a study drawing" worked out by Kane under Milton's direction, as Milton says it was, either before or after the alleged date of Exhibit No. 17, or both?

Milton describes a design which Chiville worked out under his direction which is very much more like Kane's sketch or tracing, Exhibit No. 17, than is the drawing, No. 18, which Kane claims to have evolved from No. 17. Indeed, Chiville's design appears to have been very similar to that shown in Exhibit No. 17. Thus, at page 576 of the record, after stating that Mr. Webster had become impatient at the delay in overcoming the troubles with the low tension magneto, and offered to take Mr. Chiville off the high tension work, which he was doing under Mr. Milton's direction, and put him on the low tension work, Mr. Milton testified:

> Q. Did you do that?
>
> A. I did.
>
> Q. What did Mr. Chiville do about it?
>
> A. Mr. Chiville was working, doing his drafting in the main drafting room on the third floor of the old building of the Webster Manufacturing Company, and he took the ideas that I gave him of consolidating the double link motion machine with the bracket supporting magneto, with the spark electrodes in the casting that it was formed in—
>
> Q. Do you mean the spark plug?

A. The spark plug carrying the whole thing on the two bolts.

Q. What two bolts?

A. The only two bolts that are available at that time for that: the bolts that formerly held—

Q. The cylinder bolts: the engine bolts?

A. They are both on the side of the cylider wall. Mr. Chiville carried out the instructions very faithfully, as I recall it. He took that identical apparatus, consolidated it with the plug, and turned it in a vertical position, and it gave me substantially what we would have if we took the double link motion and put it on the plug. He worked it with the bell-crank lever, which was the first connection with the push rod. That formed one of the links. This was a very unsightly affair and it was not possible to use it because it would interfere or strike the hopper on the hopper cooling type of the International Harvester engine. While he was doing that Mr. Kane was working on the other type, which I finally used.

Q. The double link type?

A. No, we gradually eliminated the parts—

Q. Did he start with the double link type?

A. We started with the double link type, with that general arrangement, and as we worked on the thing and got it developed in the process of development we dropped one part and then another as we simplified it, which is the ordinary process of these experimental developments.

Q. Then what did you finally reach? What type of adaptation of the magneto did you reach?

A. We finally reached the unitary plug with magneto supporting bracket as an integral unit.

Q. Single or double link?

A. We finally eliminated the links, and had the push come over the roller direct, instead of being moved by the link. The roller did the guiding."

As will be noted, the design which he says Mr. Chiville got up under his instruction, was very like that shown in Kane's Exhibit No. 17—the magneto in vertical position, the armature operated by a bell-crank lever, and the

interference with the hopper of the hopper cooled type of engine. And he says that while Mr. Chiville was working on that design "Mr. Kane was working on the other type, which I finally used"—*i. e.*, the design evolved in the study drawing, Exhibit No. 18.

Is it not altogether more reasonable to believe that Exhibits Nos. 17 and 18 were in fact entirely independent designs, as a comparison of them indicates and as Mr. Milton says they were, than that the design of No. 17 was conceived by Kane, as a new and original thing on the Sunday afternoon in question, and followed up immediately afterwards with what he calls a mere carrying out or development of it, but which was in fact the production of the new and radically different design in Exhibit No. 18?

In view of the testimony contained in the record—the pressing demand for Kane's alleged invention and his story of the circumstances under which it was produced and introduced into practical use—some of the representations of his attorneys and himself to the Patent Office, in the course of the prosecution of his application, are also interesting. Thus, at page 661 of the Exhibit Book, in a petition relating to the Milton and Podlesak interferences, his attorneys said for him:

> "Soon after the time that applicant made his invention set forth in the above referred to application, he disclosed the same to John L. Milton, the patentee Milton above referred to, and Emil Podlesak, the patentee Podlesak above referred to, who were in the employ of the Webster Electric Company in the experimental department thereof. *At that time the Webster Electric Company was not interested in this invention, for the reason that there was no demand yet for such electric igniters.* After applicant had made a number of his igniters, and showed the advantages thereof, said Milton applied for his patent, and licensed the Webster Electric Company to manufacture said electric igniters. Then later Podlesak made application for his patent, and also licensed the

> Webster Electric Company to manufacture under his patent."

This petition was supported by the affidavit of Kane (pp. 663, 664), in which he alleged, among other things:

> "that he disclosed his invention as set forth in the above-entitled application to both John L. Milton and Emil Podlesak, the above-named patentees, long before either Milton or Podlesak made application for their above-mentioned patents, and while said Milton and Podlesak were in the employment of the Webster Electric Company, in the experimental department thereof, *in an endeavor to interest the Webster Electric Company in affiant's invention.*"

Both Kane and Munn, as we have seen, sought to give the impression that Milton had nothing whatever to do with the design or development of the improved magneto, and would even have the court believe that he knew very little about what was going on, notwithstanding the fact that he was at the head of the magneto department and in direct charge of it. Mr. Webster's testimony, however, does not lend any support to such a theory, for while he now seems to be under the impression (contrary to that indicated by his conduct at and following the events now being considered) that the new design was Kane's idea, rather than Milton's, he nowhere gives the impression by his testimony that Milton was not thoroughly familiar with it and its development from start to finish. As we have already seen, he wrote Milton a letter on April 16th, within two days after the completion of the drawing, Exhibit No. 18, advising him that the Harvester Company would send over an engine upon which to test the new magneto; and he repeatedly says, in the course of his testimony, that the new design, which he thinks was first submitted to him in the form of Kane's alleged sketch, Exhibit No. 17, was shown to and considered by the engineers of the company. (Rec., 346, 361, 369). It is of course incredible that it

should have been shown to and considered by the engineers of the company, whoever they have been, without being shown to and considered by Milton, who was at the head of the magneto department and the man most directly interested, and it is perfectly clear that he was not excluded. Indeed, at page 369 of the record, he expressly mentions Mr. Milton as one of those with whom he discussed the new design. Thus, referring to the sketch, Exhibit No. 17, which he thinks he took and exhibited to Mr. Cavanaugh after it had been submitted to him by Mr. Kane, he says:

"Q. And you did not receive any explanation from Mr. Chiville or Mr. Munn or Mr.—?

A. Mr. Chiville—

Q. Or Mr. Milton, or Mr. Kane, about this design, did you?

A. Mr. Milton, and Mr. Munn—all of us undoubtedly talked about it."

Mr. Webster, like Mr. Kane, Sr., identifies the construction disclosed in the sketch, Exhibit No. 17, as being that which was shown to Mr. Cavanaugh by assuming that it is the same construction that was afterwards built (Rec., 369), whereas, as we have seen, the construction actually built bore no resemblance whatsoever to that disclosed in Exhibit No. 17, excepting in the single fact that the magneto was supported (in a different way) by the ignitor block or plug.

Mr. Webster's testimony shows throughout that his memory is unreliable, and that he is very apt to confuse present impressions with what he thinks is a distinct memory of past events. Thus, for instance, he had no recollection whatsoever of having testified in the interference between Kane and Milton respecting the very matters concerning which he was examined in the present case, although, according to the interference record (Vol. II., 439-443) he testified in the interference case on November 28, 1916, only a little more than two years prior

to his testimony in the present case. He admits that it is most extraordinary that he has no recollection about having testified in the interference, but nevertheless asserts that he has not the slightest memory of it. (Rec., 349-351, 365-367). He also testified (Rec., 365) that he has no recollection of seeing the sketch, Exhibit No. 17, which Kane claims to have shown to him on that Monday morning, saying:

> "I do not remember seeing this sketch at all. I suppose that I did see it, and that I turned it over to the engineers, and we approved it, or I went down and showed it to Mr. Cavanaugh, and he approved it."

Mr. Webster further testifies, at pages 366-367 of the record, as follows:

> "How do you know, Mr. Webster, that this design that was submitted ultimately to Mr. Cavanaugh, was the design that Kane had at the time that it was submitted by him in conjunction with Mr. Chiville? How do you know that it was the same design as that?
>
> A. Well, the same as you would; it would not be anything else but the same design. There was no legerdemain that he could change it to something else.
>
> Q. How do you know but what it was the design of somebody else that was adopted, rather than that which Mr. Kane produced in conjunction with Mr. Chiville?
>
> A. Well, it was done so quick, I don't think a man in one day could get up a design that was successful, and bring it out.
>
> Q. Didn't you hear Mr. Kane say that he had gotten it up in one day?
>
> A. He made the design in one day.
>
> Q. Yes.
>
> A. Yes, he said. Very true. But it was all done under our roof.
>
> Q. I am not inquiring as to where it was done.
>
> A. But it was done right in the—
>
> Q. Done in one day?
>
> A. Started right off, doing it, yes.

Q. You asked him, one day, to get a design for you?

A. Yes.

Q. And he got it the next day?

A. The day following.

Q. Well, the day following.

A. Yes.

Q. All right. You do not know what that design was, or anything about it, do you?

A. Yes, I do. Don't ask me a foolish question like that.

Q. What was it?

A. Of course I know.

Q. What was it?

A. It was the design that we adopted and put on our engine.

Q. Are you sure?

A. Yes.

Q. That it was the one you adopted?

A. Yes.

Q. And put on your engine?

A. Yes.

Q. *Did you see any drawing of it at that time?*

A. *I do not know whether I did or not.*

Q. Did you see any drawing of it at that time?

A. I do not know whether I did or not.

Q. Then how do you know that it was the same design, that he explained to you on that day, that subsequently went on the engine?

A. Because, Mr. Bulkley, I know that that machine was made right off from that design that was in the factory there, and that I am practically sure I took that design right down to Mr. Cavanaugh, and showed it to him, and got his approval."

As heretofore pointed out, the only drawing which Kane claims to have shown to Mr. Cavanaugh was his alleged sketch, Exhibit No. 17, and that disclosed a design radically different from the design of the magneto as actually built, the latter conforming to the subsequent drawing, Exhibit No. 18. Mr. Webster, like Mr. Kane, Sr., erroneously

assumed that the magneto as built corresponded with the design disclosed in Exhibit No. 17.

While it is Mr. Webster's present impression that Kane was the originator of the improved design in question, his testimony shows that he was not in a position to really know whether the design did in fact originate with Kane, or with Milton, or with some one else. Except for the fact that he thinks Kane showed him the sketch, Exhibit No. 17, which he claims to have made at his home on that Sunday afternoon, and which he erroneously assumes to have disclosed the construction subsequently employed, there would manifestly be little basis for his impression respecting the origin of the design, for had it been developed in the ordinary course of evolution in the Webster plant, under Milton's immediate direction and as an embodiment of his ideas, Mr. Webster's knowledge of the situation would not have been any different from what it appears by the record to have been.

Moreover, Mr. Webster's present impressions, which happen to accord so well with the interests of his company, are not in accord with his conduct following the getting up and utilization of the improved design. He admits, as we have seen, that he never gave Kane the prize which he thinks he offered to the man who should produce a successful design, and it does not appear that Kane ever complained of his failure to do so. Moreover, when the question of applying for a patent came up he told Kane (according to the latter's testimony), that he did not think there was anything patentable in the new design. (Rec., 256.) Mr. Webster testifies that he has no recollection of this incident (Rec., 364), but the record shows, by documentary evidence, that he later approved the filing of an application on the new design in Milton's name, and as Milton's invention, and his company paid the expenses of the preparation and prosecution of the application, acquired the patent (along with others) from Milton for the sum of $25,000, advertised the new magneto as the "Milton Magneto," marked it patented with the

date of the Milton patent after the latter issued, notified alleged infringers that they were infringing the patent—and continued to act in this manner, with a full recognition of Milton as the actual originator and inventor of the improved design, until long after the present suit was brought, whereupon, being advised by the company's counsel that it was necessary to acquire the Kane application (of which he had had no previous knowledge), for the "protection" of the company, it was purchased for the sum of $12,000. (Rec., 371-374.)*

In other words, from the year 1909 continuously on forward to the year 1916—a period of some seven years—neither Mr. Webster nor his company, by a single word or act, evidenced in any manner whatsoever that Kane, rather than Milton, was the originator of the newly designed magneto, which they were continuously manufacturing and selling throughout that period, but on the contrary their every word and act were in accord with a full recognition of Milton as the inventor or originator, and entirely inconsistent with any thought or recognition of Kane as such.

There is no pretense or claim that any new light has been thrown upon the origin or inventorship of the new design during the succeeding years—that Mr. Webster or the plaintiff has any better or more complete knowledge at the present time respecting such origin and inventorship than they had contemporaneously with the events themselves. On the contrary, Mr. Webster's own testimony clearly shows that he must have had a better and

*There was no necessity for the Webster Company acquiring the Kane application for protection against any patent that might be issued upon it, since it already held an implied license, or shop right, to use the invention by reason of Kane's employment; and even after acquiring the application there was no necessity for taking away Milton's claims and repatenting them to Kane, and attempting to do the same thing with Podlesak's claims, and carrying its effort all of the way to the Court of Appeals of the District of Columbia, in order to secure "protection" against the Kane patent. The purpose for which it acquired the Kane application was manifestly the use which it subsequently made of the Kane patent in the present suit.

more accurate knowledge of the facts ten years ago than he can possibly have to-day with his admittedly failing memory, and yet, with full knowledge of the facts at the time, we find him personally communicated with regarding the filing of the application for patent in Mr. Milton's name and authorizing it and paying for it. Thus it appears that, having filed the application for his British patent on October 28, 1909, Mr. Milton had one year's time, until October 28, 1910, under the convention covering such matters, to file his application in the United States. As the expiration of the time approached, he took the matter up with the Webster Company's counsel and on September 10, 1910, they wrote him (Vol. II., 347) that they were making inquiry about the matter. On September 29, 1910, having heard nothing further from them, Mr. Milton wrote Mr. Williams as follows (Vol. II., 347):

> "I have not received further reply to your letter of the 10th instant. The time in which to get this application (British No. 24,838 of '09) has almost expired. I am obliged to request you to advise me by return mail your decision as well as that of the Webster Mfg. Co., on this matter. Please let me have the information as asked."

In reply to this letter Mr. Williams wrote Mr. Milton on October 10, 1910 (347):

> "Replying to your letter of September 29th, I have to say that we called the matter of the application covering the subject matter of the British patent No. 24,838/09 to Mr. Webster and the Webster Electric Company but have had no reply. I do not believe they would wish me to decide the matter on my own initiative. I have therefore written them again, enclosing a copy of your letter."

On October 10, 1910, Mr. Milton wrote Mr. Webster personally the letter appearing at page 348, reading:

"Mr Lynn A. Williams has informed me that he has asked you for instructions regarding filing an application for United States patent on the invention disclosed in my British application No. 24,838/09 and that you have not replied. Please decide this question and advise Brown & Williams and me immediately. I regard this case of importance and believe it is to be worth a patent."

On October 13th Mr. Williams wrote Mr. Milton that he had talked with Mr. Webster over the telephone about the matter, and that "He promised to come in to-day and to come to a final decision one way or the other," and later, on the same day, Mr. Williams wrote Mr. Milton a second letter (349), in which he said:

"Mr. T. K. Webster has been in talking with me about the United States application covering the subject matter of your British application No. 24,838/09. He will not be able to come to a definite conclusion until tomorrow when he wishes me to look over one of the low-tension machines which the company is now making.

I told him that you appreciated the importance of having the United States application filed at once and that you were, therefore, insistent that a decision should be reached. I told that you were right in appreciating the importance of prompt action. The result of our conference was that we shall proceed at once with the preparation of the application papers and before they are finished Mr. Webster will have come to a decision. If he does not wish to file the application, it will be available to you for that purpose and can be filed easily within the time limit."

It appears that Mr. Webster did not "come to a definite conclusion" on the following day, and that on October 25, 1910, Mr. Williams sent the application to Mr. Milton with the letter appearing at page 350, the last paragraph of which reads as follows:

> "You can file the application as suggested by forwarding the original specifications properly executed, together with the drawings to the Commissioner of Patents. Do not fail to enclose a money order for $15 filing fee."

The record shows (569) that Mr. Milton followed these instructions and forwarded the application to the Patent Office himself, with the filing fee, but that the Webster Company later on took over the application and paid the expenses of its preparation and prosecution. (Rec., 578.) In the interim, however, Mr. Williams had become anxious about the payment of his fees for the preparation of the application, rendered a bill for them to Mr. Milton and pressed him for payment (Vol. II., 351, 352), whereupon, on February 8, 1911, Mr. Milton wrote Mr. Webster the further letter appearing at page 353 of the Exhibit Book and reading:

> "With reference to my U. S. patent application No. 589,564 covering the trip finger and spring yoke, desire to state that Mr. Williams seems quite anxious to know for whom he has and is handling this case. He has just sent me a second invoice for this work. If you do not care to have this patent taken out, please send Brown & Williams a check for $82.50, as per the enclosed invoice, and charge the same to my account."

This is the end of the correspondence as found in the record, but the latter shows that Mr. Webster subsequently concluded to have his company take over the application, and that it paid the expenses of it.

The significance of the foregoing lies not only in the fact that the new design was called to Mr. Webster's personal attention *as Mr. Milton's invention*, but that Mr. Milton was asserting it to be an invention of importance, upon which he wished to obtain a patent for himself if the Webster Company did not care to take out a patent under his contract with it. With full knowledge of all

the facts concerning which he now testifies, and from which he seeks to show that Kane and not Milton was the inventor of the subject matter in question, Mr. Webster never questioned the fact that Mr. Milton was the real inventor and entitled to any patent that might be obtainable, his only hesitation apparently being due to the fact that (as Kane asserts he told him) he doubted whether there was anything patentable in it. For whatever it was worth, he fully recognized Mr. Milton to be the inventor of it, and apparently had no thought whatever to the contrary.

Now, let us briefly consider Mr. Milton's own testimony regarding the matters which have been discussed, and such corroboration of it as the record affords. It is to be remembered, in considering the testimony in his behalf and that in behalf of Kane, that practically all of the record evidence—letters, drawings, prints, etc.—relating to the subject matter of the controversy is in the hands of the plaintiff, and that most of the witnesses familiar with the matters in controvery are likewise still in the employ of plaintiff, while Kane himself, although not now in plaintiff's employ, is directly interested in upholding, and no doubt obligated to plaintiff to assist it in upholding, his patent for which he has so recently received a large sum of money from plaintiff.

The witness called on behalf of Milton, on the other hand,—the few that were available,—were and are wholly disinterested, and even Milton himself has not the slightest pecuniary interest in the outcome of the controversy. His sole interest in it is that expressed in his letter to plaintiff's counsel when asked to concede priority to Kane —a desire to see his patent treated right, and his belief that he was in fact the originator and inventor of the subject matter disclosed in it. (Vol. II., 359).

Mr. Milton did not make a good witness—his interest in the controversy had not been sufficient to induce him to make any careful preparation for his testimony, in the way of going over such old correspondence and drawings

and other papers as he had in his possession, to refresh his recollection of the events occurring ten years earlier, and his unrefresh recollection, particularly with respect to dates, was often not in accord with established facts and documentary proofs; but we think no one can read his testimony from beginning to end without being impressed with his honesty and with the truth of his statements according to his own sincere belief. Moreover, the record shows that he was in no way hostile to plaintiff or its counsel, but had been in conference with them (as well as defendant's counsel) shortly before testifying, and had submitted to them, as well as to defendant's counsel, such documentary proofs as he had and thought would be helpful to either side.

With this understanding of his interest and disposition in the controversy, let us briefly examine his testimony.

At pages 508 to 517 of the record Mr. Milton relates the history of his connection with the design and development of electric ignition apparatus and describes the circumstances under which he became connected with the Webster Company, and the difficulties encountered with the early magnetos manufactured by the company under his direction, including that which the company was supplying to the International Harvester Company at the date of the developments here in controversy.

With respect to the connection of young Kane with the Webster Company he testifies that it was he, Milton, who arranged for him to come with the company, having done so at the request of Kane's father. (Rec., 975). With respect to the origin and development of the design of magneto here in controversy—the so-called unitary construction—he testifies (Rec., 531) that the Harvester people told them that they had had so much trouble with the old magneto mounted on the boss of the engine cylinder that they could no longer permit them to be mounted in that manner—that this information came to him through Mr. Webster, and that they then had a serious conference on the subject, as a result of which Milton proposed "the combining of the

whole thing into one structure and putting it on the big, strong bolts, back of the cylinder; that is, building a magneto with its supporting bracket, its mechanism, double link, and carrying the electrodes," concerning which idea he further testifies at page 532 of the record as follows:

"Q. And fastening it to the engine how?

A. And fasten it into the engine with these big, strong bolts. And Mr. Webster said—I don't remember his words exactly, but the instruction was to see how quickly we could do it, or if it could be done. So I started to work on that, and at that time Mr. Webster had given me Mr. Chiville who was doing my high tension development work, and I had Mr. E. J. Kane to do my low tension work; Mr. Kane had been with the company then several months, he having come there in the latter part of 1908, in the fall of 1908, and had been working around there, and I found he could make drawings and he had made some drawings under my instructions, and I remember giving him that problem to do.*

Q. What did you say to him?

A. To take this double link machine and extend that bracket so as to form the spark plug for holding the electrode, and put in the insulation, and making up the mechanism, as I remember it. That was my instruction and I remember him starting on it, and I remember his making a couple of sketches on it which were study sketches, without getting the thing down to a final meeting place. There was one series of operations—

Q. What did Mr. Kane do?

A. He started to work on these designs, and he was working at that time upon the fifth floor, and there was a little tool room that had been vacated some months before that. He made the drawings under my instructions, and which I watched, each stage, because I was very keenly interested in it because I was very hopeful of solving this problem. I always

*At page 663 of the Record, Mr. Milton states that when he first saw Chiville at the Webster plant he was working as a draftsman in the drafting room.

believed that the low tension machine would be the first one that we could get material business from.

Q. Where did this interview occur with Mr. Kane, if you remember, when you told him what you wanted him to embody in the drawing?

A. I cannot say definitely whether it was downstairs or up on the fifth floor, but I am inclined to think on the fifth floor *because I spent most of my time up there.*

Q. About when was it, what time of the year?

A. Well, since I have looked up my records and different letters and drawings in connection with it, it takes form in my mind as the spring of 1909.

Q. With reference to the time when the engine, the Merwin engine, was taken away, about how long after that was it?

A. The Merwin engine had been gone a number of weeks, I don't know how long, when we got the information that we could not use that boss."*

With respect to Kane's alleged sketch of April 11, 1909, Mr. Milton testifies (Rec., 533):

"Q. I show you Plaintiff's Exhibit 17; did you ever see that drawing before?

A. I have no way of definitely identifying this drawing, but I remember very distinctly the idea as portrayed here as being one of the forms that were discussed in connection with this development work to which I referred.

Q. What development work was that, Mr. Milton?

A. The building of the mechanism, the bracket, the sparker, and sparker electrode into a single structure.

Q. And how mounted on the engine?

A. Mounted on the engine with the two bolts which formerly held the spark electrode. These are the two bolts; the arm coming here, coming around

*The Merwin engine here referred to was a 4-horse power International Harvester Company engine, upon which the Webster Company had been testing magnetos, and was sold to Mr. Merwin and taken away in January, 1909. (Rec., 526, 538-540.)

here. One of the studies that preceded this came immediately around and made a box structure, which was very bad from a foundry standpoint; it was very difficult to machine. This one here has some of those objections. The magneto as shown here, and this whole thing is of a reduced size. This one had another objection to it, I remember it, this extension here, back under toward the closed end of the cylinder wall; on one type of the International Harvester Company horizontal engine was an exhaust pipe, according to my recollection; it was known as their famous Hopper Cooled Engine; the exhaust pipe went up, I remember we made the change—

Q. Who made that drawing, Mr. Milton?

A. This is a tracing, made from—evidently from a drawing. * * * According to my best remembrance, Mr. Kane made this tracing.

Q. How did he come to make it?

A. Well, how he happened to come to make this particular tracing I don't recall, because our layout work had been done on other form of paper.

Q. What do you refer to as the other layout work?

A. In making drawings we generally use a—in fact, it was almost without exception, we used a grade of paper that would stand very considerable erasing, because we never knew when we put down a line how long that was going to remain, because we were making changes in getting the ideas worked out so as to meet the various conditions of machine work in the foundry and assembly and installation, and so on.

Q. Were such other layout drawings as that made?

A. They were.

Q. Do you know whether it was prior to this tracing, as you call it, or drawing, or whatever it is, No. 17?

A. I should say it was prior to this.

Q. And who made some or all of those drawings, those layout drawings?

A. Mr. Kane made them, under my instructions.

Q. Did you ever see this drawing, Plaintiff's Exhibit No. 18?

A. I remember the idea as shown here very plainly. I have no direct way of identifying this particular drawing.

Q. What idea do you refer to, Mr. Milton?

A. The structure of the plug, and bracket and mechanism and all, in their relations to each other. This looks like the original study drawing, although it is not a complete one.

Mr. Williams: I object, your Honor, to these speculations as to what it looks like and so on. He says he can't identify it, can't remember it.

The Witness: I remember the idea very definitely: I remember the type of machine very definitely. The physical piece of paper itself I do not identify, and I have no means of doing that. This does not show the idea completely; it is a study drawing—in other words, it is not a working drawing.

Mr. Bulkley: Do you have any recollection as to who made that drawing?

The Witness: E. J. Kane, or substantially the same thing; I know he worked on that idea under my instruction at that time."

At page 535 of the record he identifies the blue print of June 3, 1909 (Defendant's Exhibit 21) as a print from a tracing of the working drawing made by the draftsman, Kroeplin, for the new design, and on page 536 he further testifies respecting it:

"Q. Did you have anything to do with the embodiment of the structure shown in these drawings in actual mechanical form, and if so, what?

A. I watched over that development very carefully, to make sure that the design not only accomplished the desired result from the standpoint of the operation of the engine but also to get a type which could be made in a foundry without serious objection from the foundry, a type that could be machined readily and at low cost. I remember having discussed those points with the various men in charge of the work that that naturally fell on. In this particular design I remember distinctly talking to Mr. Munn regarding the machine points of it.

"Q. Going back a little, Mr. Milton, tell us if there is anything more with reference to talks you had with Mr. Kane about particularly that form of device which is shown in his tracing or drawing, Exhibit No. 17. Did you tell anything about that?

The Witness: I think I can answer to this drawing, or a duplicate of it or from sketches. When we got to this stage, which incidentally this design resembles very similarly the features as shown on the original single link machine; we came up with the pusher rod from the cam shaft direct onto the link; this link has an extension on it, however, which directly engages with the trip finger of the magneto which is also present in the other machine. And the next thing I remember in connection with this was to get rid of this arm that came around here at the back, because, as I said, there was one type of Harvester horizontal engine where that would interfere. And I remember, to get rid of that I proposed putting it down underneath, fastening up across, which is substantially what we have in our structure, as you see here in some of these models; I have reference to the one on that demonstrating stand.

Q. Which one is that?

A. The one under the blue print. The one that Mr. Carter has his hand on. We put that yoke underneath, taking it from the end towards the closed end of the cylinder and putting it down below.

Q. Will you just tell us what was the particular kind of construction there shown and what criticism you made, if any, with reference to it as a foundry proposition?

A. Well, I have referred to the foundry proposition, and this being a little bit awkward and which could be improved by changing the position of some of these parts, and in even this one it is better than our first one; that is, easier to make.

Q. Did you talk with Mr. Kane?

A. I did.

Q. Anything about—

A. This one.

Q. —the form of construction which is shown here in Plaintiff's Exhibit 18?

A. I remember working with Mr. Kane on this design, as it progressed.

Q. Did you have any criticism of that form, or type there, of embodiment there illustrated in Plaintiff's Exhibit 18, and if so, what, which you made known to Mr. Kane?

A. Well, it is my remembrance that when we got to this stage of this study drawing, that it was turned over to Mr. Kroeplin who made the working drawings there so we could make one of them, because we could not have made one from this drawing.

Mr. Williams: You could or could not?

The Witness: Because we couldn't.

Mr. Williams: Could not?

The Witness: Could not. It is not a finished drawing, and there are no dimensions on it. Strictly a study drawing. That is, I want to modify that and say that in using the class of help that we were using at that time."

At page 545 of the record Mr. Milton further testified:

"Q. Mr. Milton, will you go on, and tell us what was done after the completion of the drawing, the yellow drawing, Plaintiff's Exhibit 18? Do you know what one I refer to?

A. Yes, I recall. I know; why, we made working drawings for patterns; then after the patterns were started, or immediately following that drawing, we proceeded to make the drawings for the machine work; and while the drawings for the patterns were being made, and the castings procured, we started on the other parts, as we would ordinarily do in a case of that kind, where we were working under speed.

Mr. Williams: Q. What is that?

A. I say, as we would ordinarily do in a case of that kind, when we were working for speed, expediting the work.

Mr. Bulkley: Q. Well, what character of drawings did you make? How were they made, and how were they given to the workmen? In what form?

A. According to my best memory, we followed our regular form.

Mr. Williams: Q. What is that?

A. We followed our regular routine on that, which was to make drawings on regular drawing paper, and shellac them or put a clear varnish on them, to protect them while the mechanics were handling them. And then these drawings go to the shop, and after the pieces were finished, and any changes noted on them, then we would make our tracings from those drawings."

At page 550 of the record Mr. Milton explained why he distinctly remembered that he was in Chicago continuously during the period of the development of the new design, his testimony on this point having been heretofore quoted, and continued:

"Q. Now, during this period just stated to you, from the time this development work began on this particular type of magneto, in which the magneto is mounted upon the plug, up to the conclusion of that development, to a point where it was produced as a marketable article, how much time did you devote to the high tension work, relatively speaking?

A. Well, it is a bit difficult for me to say it, after the lapse of—in round figures,—ten years.

Q. I only ask approximately. You do not need to—

A. But I know that the low tension machine was always of more interest to me, because, as I stated before, I thought that that was the machine that was going to give us our first business, and I thought I knew a great deal more about it than I did the jump spark machine."

And further, on page 551, after describing the arrangement made with the Harvester Company to let the Webster Company have an engine upon which to test the magneto, heretofore referred to:

"Q. Now, after you had completed the work, or after the general study work, and designing, had been completed, then what next did you do after you had your various parts made, and your entire tracing completed?

A. Well, there was a stage ahead of that. The details drawings were made, and put in the shop, and the parts made, and the machine was assembled, and then it was—

Q. That is, before the complete tracing?

A. Oh, yes.

Q. Embodying all the views?

A. Yes.

Q. The machine was made?

A. Yes; the machine was tried before the tracing was made. Then we put it on the engine, and tested it,—ran it."

The tracing here referred to was that from which the blue print of June 3, 1909, identified by Mr. Milton and Mr. Kroeplin and heretofore referred to, was made. It will be remembered that Mr. Webster's letter of April 29, 1909, to the Harvester Company, and the accompanying photograph, show that the magneto had been completed and placed on the engine and tested prior to that date.

At the bottom of page 551 and continuing on the following pages, Mr. Milton further testifies regarding the character of the first magneto of the new design that was built:

"Q. Now, point out among these various exhibits here one of those completed engines, as it was completed, before you had the tracing in its entirety made and tried out on the engine?

A. Well, that is difficult to do right now, because I do not believe there are any models there that represent that machine as it was first made; there are some that would carry the idea exactly; there is the one you have your hand on (indicating), and the model, Exhibit 15, this side of it,—they carry the idea generally, almost the complete idea.

Q. What were the differences, if any; could you tell, in a general way?

A. Why, the difference, one difference particularly, the first one we made did not have the automatic cut-out feature on it, which these have. That was applied to the first engine of which we have

photographs. It was a separate device, and later it was incorporated into this design, as is shown here. I would say that was the principal difference. Another big difference,—I will not say 'big' difference,—it was an important difference,—was in the yoke; the first yoke was a forging, made up of four pieces.

Q. Now, keep your voice up on this, so that we can get it.

A. There was a main body, that had two pins driven into it, and riveted over. That gives three pieces. And the fourth piece was a little steel insert, and, these, we used a malleable iron casting, with the steel insert riveted into it, which brought us to two pieces. That was just another evidence of the development.

Q. And, with those differences, it was substantially the same as—

A. Substantially the same.

Q. As Plaintiff's Exhibits 15, or 47?

A. Substantially the same."

As heretofore pointed out, Mr. Kane made no mention whatever in his testimony of the character of this first magneto that was built after and in accordance with the drawing, Exhibit No. 18. Mr. Milton was apparently much more familiar with the details of it than was Mr. Kane.

With reference to the completion and test of the first magneto Mr. Milton testified at pages 552 and 553 as follows:

"Q. About when was it that this machine was completed, from the separate drawings which were distributed among the workmen?

A. Well, I cannot say definitely, but it seems to be in my memory that it took something like two weeks to do it.

Q. From and after what time?

A. From and after the time we made the study drawing, as shown in this exhibit, Exhibit 18.

Q. The yellow drawing?

A. Yes.

Q. Plaintiff's Exhibit 18?

A. Yes, sir.

Q. What more, if anything, did you have to do with reference to the manufacture of this new type of magneto construction, after the completion of the first specimen?

A. Why, it was presented to the important prospective customers we had, the Harvester Company. And I discussed that with Mr. Webster, as the best method of doing it, and right away it was agreed that we would ask them to come over; so Mr. Cavanaugh and Mr. Maurice Kane, and Mr. Stewart, who was in charge of the patent department at that time, all came over.

Q. Came over where?

A. To the Webster Manufacturing Company's plant; and we took them up to the fifth floor, and ran the engine for them, with this device on it; and everybody was very much pleased; considerable enthusiasm was exhibited."

It will be remembered that young Kane and his father and Mr. Munn all carefully refrained from mentioning the fact that Mr. Webster was even present at this first exhibition of the magneto to the Harvester people, seeking to give the impression that he had no connection with or interest in the matter. Quite aside from Mr. Milton's own testimony on the point, however, it would tax one's credulity to the breaking point to believe that Mr. Milton was not in the thick of it throughout and present at this demonstration. No one goes the length of saying he was not present, although seeking to give that impression.

With respect to the making of patterns for the new design, and the foundry and machine work of it, Mr. Webster testified at pages 553-554 as follows:

"Q. Now, Mr. Milton, will you detail, as fully as you remember it, just what you had to do with the making of the patterns, from the drawings, and to do with the foundry work, as it went through, and the machine work, as it was continued on, in connection with this first machine?

A. This first machine was experimental, and to

get that through the other departments, with least possible time, I found that it was always necessary to appear in person, because Mr. Webster had arranged with all of his departments to do what I wanted immediately, at the expense of the other things that were coming through; and I would talk to a man by the name of Cummings, in charge of the pattern department, and watch it through the various stages; and I discussed the design with the foundry manager.

Q. Who was that?

A. Mr. John Anderson. And also discussed with Munn the method of machining that. I remember particularly that when this irregularly shaped casting came out, it was a little bit of a puzzle as to just how we could machine that experimentally, and also as a regular manufacturing proposition; and I remember his showing me how he would get it to one side of the machine and how he would turn it around on the lathe, and machine the other side, and how he would hold the parallel faces in line, and how he would hold the concentric holes together, and he would measure it, over in a chuck—to get the off-center holes, which were the ones in which the insulated electrode and the movable electrode were put. I remember those details very distinctly. Also, it was a new problem to us; we had never made a make and break mechanism in our experiments before; that was the first one.

Q. Do you remember any particular man connected with the machine work other than Munn, with whom you had to do, or dealt with, in this development?

A. Why, on the experimental work, I discussed that with Munn. I do not recall having talked to anybody else, for the experimental end of it, that is, bringing through this first model.

Q. Well, subsequently, I mean, in connection with the machine work, what did you have to do?

A. You have reference to the production end, I suppose?

Q. I presume so.

A. The mechanics."

We shall have occasion a little later to refer to the corroborating testimony of Mr. Anderson.

At pages 562 and 563 of the record, Mr. Milton describes the circumstances under which he temporarily severed his connection with the Webster Company in the summer of 1909 and went to Europe. Mr. Webster had testified that Mr. Milton left without Mr. Webster's consent and against his wishes—"laid down" on him, as it were—but Mr. Milton's testimony shows quite the contrary, and his testimony is corroborated by correspondence had with Mr. Webster while Milton was in Europe, as well as by his subsequent return to the Webster Company. Mr. Webster was evidently greatly disappointed at the failure of the high tension automobile magneto, and disposed to place the blame on Mr. Milton, whereas the record shows that Mr. Milton was never enthusiastic over the high tension work, with which he was much less familiar than with the low tension, and that it was Mr. Webster who was enthusiastic and excited about it, and correspondingly disappointed when it failed.

Mr. Milton testifies (bottom of page 562), that he went to Europe in the third week of August, 1909, and returned to this country before Christmas, and was in Tiffin, Ohio, where the Webster Company was then located, on Christmas Eve, and became connected with the company again in January or February. He also testified (p. 629) that the newly designed magneto was in commercial production before he left for Europe, that he had tools and dies made in New York for its commercial production in Europe and took them to England with him, and placed the manufacture of the magneto there, at the same time making application for an English patent. (Rec., 564, 565, 647.) In the prolonged cross-examination of Mr. Milton, plaintiff's counsel strenuously endeavored to show that both the completion of tests on the first magneto, and the commercial production of subsequent ones, was of later date than Mr. Milton thought they were, but the record is clear on the

point. With respect to the completion and tests of the first magneto, that date is fixed by the documentary evidence of Mr. Webster's letter of April 29, 1909, and the accompanying photograph, and corresponds exactly with Mr. Milton's testimony to the effect that the first magneto was completed and tested within about two weeks after the working out of the design in the drawing, Exhibit No. 18; while with respect to commercial production, there can be no mistake about the date of that when Mr. Milton distinctly remembered that it was going on before he left for Europe in August.

At page 565 of the record, Mr. Milton explains why he did not apply for an American patent before going to Europe and filing an application there for an English patent, as follows:

> "Q. Why didn't you take out— Did you file any application in the United States before in Europe?
>
> A. I had not at that time.
>
> Q. Why not?
>
> A. Because Mr. Webster and I had not agreed on the patent policy, and we simply could never come to conclusions when those questions came up, and I knew that it was my plan to file the thing,—to file the application as soon as I got to Europe and that my rights would be preserved under the rulings of the convention, so that I could apply for it at any time within a year after that."

We have heretofore referred to Mr. Milton's patent contract with the Webster Company, under which the latter had the American rights to Mr. Milton's invention, upon certain terms and conditions, and to Mr. Webster's indecision and dilatoriness respecting the filing of Mr. Milton's application on the magneto here in controversy. Mr. Milton was examined at length respecting said contract by plaintiff's counsel, on cross-examination, at pages 657-662 of the record, and produced the contract for the inspection of

counsel. He also testified concerning it in the Kane-Milton interference at page 472 of the Exhibit Book.

At page 571 of the record, Mr. Milton explained the circumstances under which he gave his testimony in the interference case of *Kane* v. *Milton*, as follows:

> "Q. Now, tell us under what circumstances you came to testify in that case.
>
> A. Previous to my giving the actual testimony Mr. Williams had written me—Mr. Lynn A. Williams had written me about doing this. I was very, very busy at the time and simply could not spare the time to get up any information on it or give the time to the taking of the testimony. Time drifted along until one day I was in his office on some other business and he asked me if I could not—when I could do it.
>
> Q. When you could do what?
>
> A. When I could give my time for taking of this testimony. I told him I simply could not see my way clear to giving any time in the immediate future, because we were just in the midst of moving our plant—having moved our plant from Detroit to Cleveland and getting established, and my time was needed in my regular work to the exclusion of everything else. He asked me if he could not take it that day. I had an engagement at 6 o'clock, leaving town that night, and he asked me if he could not take it right then, that it would not take very long, and I agreed to give it to him. I happened to be in his office. I hadn't any record and none of my letters."

This testimony of Mr. Milton is in accord with that which he gave in his interference deposition itself (Vol. II., 468-473), the concluding question and answer of which deposition was as follows (Vol. I., p. 473):

> "Q. 10. Will you please state why you have not given your testimony in this interference at an earlier date?
>
> A. When I was first asked to give my testimony by Williams, Bradbury & See, we were just in the pro-

cess of moving the entire factory and offices of the Motor Ignition & Devices Company to Cleveland, Ohio. This was later followed by the moving of my family and household effects, which consumed a good deal of energy. Simultaneously with this work, I had to do a great deal of very important traveling for my company. Following this I was ill and confined to the house for an extended period. I have not been actively connected with the Webster Manufacturing Company or the Webster Electric Company for at least five years. I have been completely occupied with business entirely separate and distinct from any Webster interest for the entire period that I have been away from them and had completely dismissed from my mind the apparatus and business affairs of the Webster companies, and at the immediate moment I am giving this testimony by a chance appointment and did not come here prepared with any of my personal records. I may add that I am giving this testimony at the request of the attorneys for the Webster Electric Company, and that is necessarily hurried owing to the fact that we had a very short period in between appointments that pertain to my active business, and at this moment I am several minutes past due on my next appointment, immediately following which I am to catch my train for Cleveland, Ohio."

In his testimony in the present case (Rec., 573) he testified regarding his deposition in the interference case as follows:

"Q. How long a time were you occupied in giving your testimony in that case?

A. According to my memory it was about an hour or an hour and a quarter.

Q. Did you subsequently find any other papers, or make any other investigation or search for papers?

A. The matter dropped entirely from my mind at that time—

Q. That is, of giving your testimony?

A. Of giving my testimony. They sent me a copy to sign, which I signed and forwarded, and until I got a letter from— No, I don't remember of any-

thing occurring after that until in the testimony of this last year, last November or the 1st of December, this last year, I first learned that the interference had been decided in favor of Kane.

Q. What did you do then? How did you learn that?

A. I was at Racine, Wisconsin, on some other work, and met you, Mr. C. C. Bulkley, and was introduced to you by Mr. Emil Podlesak, and we had dinner together and you informed me of the proceedings, and asked me what I knew about them, and I was very much interested to know the way the thing had developed.

Q. Did you subsequently make an effort to find any other or further papers in connection with this matter?

A. I agreed—I promised you that I would look through my drawings again and you—

Mr. Williams: That you would do what?

A. Look through my drawings again, which I did, and I was not impressed that I had anything of any information—that would contribute any definite information on the subject until—well, the matter was dropped then for the time being and along in December, later, Mr. Bulkley came to Cleveland on an appointment which was arranged by Mr. A. H. Bates of Cleveland, and met him in the evening, and spent a couple of hours with him—which I did. At that time we made a review of the case in the presence of Mr. Bates, and during this review he read the testimony as it was given from the records.

Q. Whose testimony do you remember was read?

A. The testimony of Mr.— It wasn't the complete testimony; just extracts from Mr. T. K. Webster's, Mr. E. J. Kane's, Mr. Chiville and Mr. Abbott Munn.

Q. Had you read or heard read that testimony before?

A. Never heard of it before.

Q. Proceed.

Mr. Williams: What was that last?

The Witness: I never heard of it before.

Mr. Bulkley: Q. What did you do after that interview with me and Mr. Bates?

A. I did quite a little bit of thinking. I felt that a great injustice had been done me. I felt that my record in the Patent Office had been besmirched and proceeded to hunt up my correspondence.

Mr. Williams: What was the last?

Mr. Bulkley: Q. What did you do after that interview with me and Mr. Bates?

Mr. Williams: I object to that last answer as to his inner feelings.

The Court: He said he did a lot of thinking, that is all right.

Mr. Williams: I don't know how it is competent as evidence.

The Court: He is pointing out what he did and why he did it.

The Witness: I thought that I might be able to set right what appeared to be wrong to me in that testimony.

The Court: In your own testimony?

A. In that testimony as it was read to me by Mr. Bulkley.

The Court: The testimony of the others.

A. Yes, I remember that I had written—that I had a considerable lot of correspondence with Mr. Teagle, and Mr. Alexander. Mr. Alexander was the former patent attorney for the Webster Manufacturing Company. I looked up my files on that and I came across some other files and I thought they might have something in them. And the more I went through the files the more records I found that would refresh my memory and also what I thought would tend to right some of these statements that I thought were wrong, in the other letters that have been offered here to-day, so I told Mr. Bates what I had found. At that time I didn't want to come to the case here and be a witness. I wanted to give my testimony in Cleveland.

Mr. Williams: I object to what he wanted to do. If he will confine himself to facts.

The Court: Yes.

Mr. Williams: If he will tell all that he said and did, that will be better.

The Witness: This is an unusual proceeding for me and I don't know what the limits are. If I overstep them I hope to be corrected.

The Court: I will correct you, if necessary.

Mr. Bulkley: Q. Then what did you do?

A. In what respect?

Q. After you had discovered this evidence, this correspondence.

A. I brought them here to Chicago and exhibited them in Mr. Lynn Williams' office to you and Mr. Williams and some other attorneys jointly. That was the end of the case, which was January 13, 1919."

As appears from this testimony, Mr. Milton never knew the outcome of the Kane-Milton interference until a date shortly before the trial of the present case.

At page 576 of the record Mr. Milton describes the design gotten up by Chiville under his direction which so closely resembled that shown in Kane's alleged sketch, Exhibit No. 17, that the latter appear to be a reproduction of it, as heretofore explained, and on the following page he testifies regarding the criticism which Kane alleges Milton made of the drawing, Exhibit No. 18, when Kane showed it to him, saying that he has no recollection of anything of the kind, and, besides, that there would have been no foundation for such criticism. We have heretofore shown that there was nothing whatever on the drawing, Exhibit No. 18, itself, without additional explanation, which could have prompted such criticism on the part of Milton, whether well founded or not, and that Kane admits that he had no other conversation with Milton regarding the drawing and offered him no explanation of it. (*Supra*, pp. 50-52).

At page 584 of the record, referring again to the decision of the Harvester Company not to permit the magnetos to be any longer attached to the boss on the engine, Mr. Milton testifies:

"Now, Mr. Milton, going back again to the conversation which you had with Mr. Webster, when you learned that the Harvester Company would not permit the use of the boss any more for the attachment of the magneto, when did that conversation occur with

reference to the time that you commenced to work with Mr. Kane?

A. Oh, it was prior to that time. You, of course, have reference to the time when I started Mr. Kane to make the design.

Q. Yes, sir.

A. On this unitary structure."

On cross-examination, at page 599 of the record, referring to a conversation which one of plaintiff's counsel, Mr. See, had with him with reference to his testimony in the interference case, Mr. Milton testified:

"Q. Did you on May 8, 1916, tell Mr. See that the pencil drawing on white paper signed 'E. J. Kane, April 11, 1909,' is a design that Kane worked out at that time, and that you remembered distinctly Kane submitting it to you?

A. I don't think that the thing was put up to me in just that way, or if I made my statement in just that way. I would say, as I have said here, *that that design was worked out under my direct instruction, and I remember the preceding designs that went ahead of that, and I remember how that thing was developed, and I remember the next stage from that.*"

At pages 607-8 of the record he was cross-examined regarding what occurred at the time his deposition in the interference case was taken, in an effort on behalf of plaintiff's counsel to show that he knew what the witnesses on behalf of Kane had testified to before giving his own deposition, as follows:

"Q. Don't you remember that we showed you at the same time, not a printed copy, but the typewritten copies of the testimony given by the other witnesses, that is, Kane and his witnesses, just before you testified?

A. If you did, I did not read them because this whole thing was done in a very short period, probably an hour or an hour and a quarter.

Q. They were there and you were told before you

finally testified at any rate what the testimony of Kane and Munn and T. K. Webster and these other parties had been, had you not?

A. If it had been told me it was not told to me in such a way that I could remember and repeat it.

Q. You were explicitly given the opportunity by us at the time you testified on that very day, were you not, the opportunity to go over all of the testimony that had been given by Kane, and by his witnesses, and to refute it or rebut it in any way that you could. That is true, is it not?

A. I do not recall having seen the copies of it, or even if they had been there I could not have taken time at that particular hour to have done it, and I mentioned to you, or before I went into Mr. McCaleb's office in connection with that, that I did not quite understand this sort of proceedings any way, where you could represent both sides of the case. I thought the thing was largely in your own hands.

Q. What both sides did you refer to in saying that?

A. Kane's side and Milton's side: that I felt whatever effort that I might make, that I would be absolutely helpless and the thing would be as you wanted it and so mentioned it.

Q. To me?

A. Yes, and you said that you would put the facts up to the Patent Office and let them decide. That was your answer. I remember that very distinctly."

At page 610 of the record, cross-examined in reference to the search which he made among his papers prior to testifying in the interference case, he testified as follows:

"Q. You were very confident, were you not, when we first began to make this search, that we were going to find the things that would settle the matter beyond any question, in the form of papers?

A. It has been my—

Q. You told me that, did'nt you?

A. It has been my usual experience that any well defined truth could be proven, and I felt that way about this.

Q. Aside from that, you told me, didn't you, that we were almost certainly going to find papers that would corroborate what you had told me as to the date of the invention and your having made it?

A. I felt so sure, and I no doubt so stated it to you."

At page 620 of the record, cross-examined about the particular construction of the yoke of the first magneto that was built, heretofore explained, he testified:

"Q. This four-piece yoke that you referred to in your testimony, how many of those were made?

A. One—or two.

Q. When was that?

A. Right at the beginning.

Q. Now, Mr. Milton, after this machine like Plaintiff's Exhibit No. 15, had first been tried out, and after it had been submitted to the Harvester Company, and tested and approved by the Harvester Company, what was next done with the machine, in so far as its commercial development is concerned?

A. Why, the Harvester Company proceeded to make the castings, all of the iron castings, and electrodes, and everything—

Q. And what did the Webster Company do—

A. (Continuing)—and everything, except the magneto proper, with the yoke, the magneto rotor, and shaft, and the springs, and the studs for supporting the springs. That was all we had to do.

Q. Now, what did you have to do with the manufacture of those devices, yourself?

A. I personally superintended it, and watched the tests on it, as it came through.

Q. When did you do that?

A. Daily.

Q. How?

A. Daily.

Q. Well, when? During what time?

A. It had been continuous from before that; all during the entire production I kept a very close watch of all that work."

With respect to the sending of the first magneto to the Harvester Company at Milwaukee, and the previous test of it, soon after its completion, on the engine at the Webster plant, Mr. Milton testifies at page 637 of the record:

"Q. Then let me ask you again: The first machine was sent to Milwaukee to be tested, was it not?

A. Yes.

Q. Now, when was it sent there?

A. It was sent there very shortly after—

Q. No. What is the date, the month?

A. Well, now, I am fixing it. Very shortly, after when Mr. Kane, Sr., Mr. Cavanaugh, and Mr. Stewart were at the Webster Company, which I think was sometime in, early, in May.

Q. So that it was early in May that that machine was sent there for test, was it?

A. That is my remembrance of it.

Q. Now, after that you did not see the machine there? You did not talk with any of the Harvester people about it yourself? You did not see any written reports from anyone about it, did you?

A. I do not recall those written reports. I may have seen them, and I may have been over to the Harvester Company and talked to Mr. Cavanaugh.

* * * * *

Q. And you do not know when they finished their tests there in Milwaukee, do you?

A. They made tests, and they were continuing to test the thing for a long period. I do not know what you would call a finished test.

Q. Weren't you concerned or interested?

A. Absolutely, all the while, and am yet."

Mr. Milton was cross-examined at length with respect to the date at which the Harvester Company gave a formal "approval" of the new design. He said that he had no knowledge or recollection respecting any such formal approval by the Harvester Company, but that he considered it approved from the date when the magneto was exhibited to Mr. Kane and Mr. Cavanaugh and Mr. Stewart on the engine at the Webster plant, concerning which Mr. Milton testified as follows (p. 638):

"Q. That approval was then early in May, you say?

A. That is my remembrance of it.

Q. That was the approval by Maurice Kane and Stewart and Cavanaugh?

A. Exactly.

Q. Did they place any order for anything, any machines?

A. No order.

Q. Who did place the order finally?

A. I do not know.

Q. Weren't you concerned as to whether you got an order?

A. Intensely so, yes, sir.

Q. Have you got anything to show anything about the receipt of that order?

A. Nothing.

Q. Or do you know anything about when it came?

A. Nothing.

Q. Or how or where?

A. I have a very strong remembrance that there was very considerable pressure put on me to get out machines, as soon as this thing was disclosed.

Q. By whom?

A. By the Harvester people, generally, I think—

Q. That was early in May they put that pressure on you, was it?

A. I would say immediately following that. I won't say it was early in May, but I think, if my other assumption was right, this is right, that it was early in May.

Q. Now, you say that Maurice Kane and Cavanaugh and Stewart saw the first of these machines like Plaintiff's Exhibit No. 15 run here in Chicago early in May, don't you?

A. I say according to my best knowledge—

Q. Yes.

A. —it was about that time.

Q. Yes. Early in May. Now, that is the first one that type that any of the Harvester people had ever seen, is it not?

A. That is the first time that any of us saw it, was right about that immediate time.

Q. Now, how early in May was it that they saw that?

A. I think it was so early in May that it may have been the first day; it may have been even the latter part of April, because we worked very continuously on it; I do not think it took us more than two days or two weeks to get the thing out."

The documentary evidence in this case—Mr. Webster's letter of April 29, 1909, to the Harvester Company, and the photograph enclosed with it—show that the test in question did in fact occur during the latter part of April.

Cross-examined at pages 639-640 respecting the date of the early work on the magneto, Mr. Milton testifies:

"A. The first letter of Mr. Webster, of April 16, 1909, and the time,—that letter was written immediately following my request to him to get an engine for this purpose. That is my anchor on this date.

Q. That is what you anchor your testimony to?

A. Yes.

Q. And by the tenth of May, notwithstanding the fact that it was early in May that the first one, sample of one of these machine was ever shown to any of the Harvester people at all, by the tenth of May you wrote Mr. Webster that you had been so overwhelmed getting out machines, of this new live business' type, that you could not attend to something else? That is your testimony now, is it not?

A. My testimony is that the interruption of the inventory, and the—

Q. No, but the live business, the first—

A. (Continuing) —demands of the Harvester Company,—that may have been only five machines; they were new, and special, and we did not have complete tools for it, and it was some job to get out even one of them.

Q. And it was that 'live business,' that is, the getting out of these five, that the Harvester Company was telephoning and telegraphing and writing letters about, was it?

A. That is my knowledge of it today.

Q. Have you got a single one of those letters or telegrams?

A. Not one.

Q. Have you tried to locate one of them?

A. I have not gone out and looked for those, but I have been through my files at that date, and did not find one.

Q. Have you talked with any of the representatives of the Harvester Company, in preparing to give your testimony here, Mr. Lord, or Mr. Kimbark, or any of the people connected with the Harvester Company?

A. The only person connected with the Harvester Company that I have talked to was Mr. Merwin, with reference to this subject.

Q. Have you made any effort at all to get a single one of the letters or telegrams referred to in your letter of May 10th, which you now say were written in the effort to procure the shipment of these new devices, like Plaintiff's Exhibit No. 15?

A. Those were company records, and they are evidently in the Webster files, and therefore I made no effort to try and find them; I do not suppose it would have done me any good if I had.

Q. Well, why not?

A. Because, the evidence and the knowledge of this thing, that has been used, has been used as the Webster Company's representatives wanted to use it."

At page 654, cross-examined respecting some of the statements made in his testimony in the interference case, Mr. Milton testified:

"A. That is the testimony which I gave without referring to any of these records that I now have before me—I have had before me—

Q. Any of them?

A. I say, these records that I have used to fix these dates by.

Q. Which records are you using to fix those dates?

A. Mr. Webster's letters particularly.

Q. Did you find among any records through which you have been searching recently any drawings made by Mr. Kane other than these two or—well,

any drawings made by Mr. Kane, tracings made by him?

A. None at all.

Q. All the other drawings relating to this low tension magneto work which you have been able to find were made by parties other than Kane?

A. Yes.

Q. The only two made by Kane were those two which were produced by him and which have his date and name signed to them, April 11, 1909, and April 14, 1909?

A. *The one of April* 14, 1909, *is the one that I remember Mr. Kane making very specifically under my instructions.*

Mr. Williams: That is not the question, and I ask the answer be stricken out.

Q. What I am asking you, or what I mean to ask you is this: Whether all of the drawings that you now know anything about relating to this low tension magneto work of the Webster Company, whether those two are not the only two so far as you know which were made by Kane.

A. That are in existence today, that I have?

Q. Yes, that you know of now, as being in existence.

A. That I know of, yes, but I haven't access to the Webster Company files."

It could hardly be expected that Mr. Milton's testimony, where it conflicts with that of plaintiff's witnesses, would be found corroborated in the record by documentary evidence from the files of the Webster Company, to which Mr. Milton had no access, nor by the testimony of witnesses still in the employ and under the influence of plaintiff, such as Mr. Munn; but it is corroborated by the testimony of a number of wholly disinterested witnesses, in no way connected in interest with either plaintiff or defendant or Mr. Milton. One of these is Albert C. McCarthy, whose testimony appears at pages 615-620 of the record. Mr. McCarthy was in the employ of the Webster Compay for fifteen years—1903 to 1918—and at the time Mr. Milton became connected with the company he was in charge of the

gas engine department. Concerning his first acquaintance with Mr. Milton, the instructions he received from Mr. Webster regarding him and his work, and the work which he subsequently did or had done for him in his department on magnetos, Mr. McCarthy testified as follows:

"Q. Did you ever know John L. Milton?

A. Very well acquainted with him.

Q. How did you first become acquainted with him?

A. Why, Mr. Webster introduced me to him in his private office.

Q. What did he say to you, when he introduced you to him?

A. He says, 'This is Mr. McCarthy; this is Mr. Milton.' And I shook hands with him; and he says, 'I want you to take Mr. Milton around the plant'; he says, 'I have hired him—' he says, 'to look after this magneto that we have here.' And, after taking him around, he says, 'I guess he can find his way back.' As near as I can remember, those were his words.

Q. Did Mr. Webster say anything to you about taking instructions from Mr. Milton?

A. Not at that time.

Q. When was that? What did he say subsequently with reference to that?

A. Well, Mr. Milton, I think, went to work a few days afterward, at the point, and Mr. Webster called me in, and told me that anything that Mr. Milton wanted, to get it out for him, and get it out quick.

Q. In connection with that?

A. And let anything else go, if it interfered with his work.

Q. Did he specify the kind of work that he wanted you to do for Mr. Milton through your department?

A. No.

Q. Let me ask you, were you at that time at the head, of what department, of the Webster Manufacturing Company?

A. The engine department. We built gasoline engines.

Q. The machine work?

A. We built gasoline engines, yes, sir.

Q. Did you have in your department the work of making patterns, and castings?

A. No. Only metal patterns.

Q. Only what?

A. Metal patterns.

Q. Did you do the machine work, in your department?

A. Oh, yes.

Q. Did you ever, through your department, do any work for Mr. Milton?

A. Yes; I done all of Mr. Milton's work up to the time that they afterward made a department by itself.

Q. What kind of work was it that you did for Mr. Milton in your department?

A. Well, magneto work. The magneto, the low tension magneto, we called it.

Mr. Williams: Q. What is that? I did not hear.

A. Magneto work, for low tension magnetos.

Mr. Bulkley: Q. Did you know anybody about the Webster—Did you know anybody about Mr. Milton's department, by the name of Abbott Munn?

A. Yes, I know him very well.

Q. Well, what did he do?

A. Mr. Munn really was Mr. Milton's assistant.

Q. Did you ever know anybody in and about the magneto work, with Mr. Milton, by the name of Kane?

A. I did not remember him. I recognized him this morning, when I was introduced to him.

Q. Did you ever do any work for him, in connection with magnetos?

A. No.

Q. Did you ever do any work for Mr. Munn?

A. Yes; that is, Mr. Munn would come to me with instructions that Mr. Milton wanted his work done; and I would get it out for him.

Q. Did you ever know of this Mr. Kane, Joe Kane, in connection with this magneto work that was being conducted by Mr. Milton?

A. No, I do not."

On cross-examination, at page 618, he testified:

"Q. Well, did you understand from Webster or from Milton that he was going to do some experimental work?

A. Yes, sir.

Q. And that you were told, as I understand it, then, when ever he wanted any machine work done, for you to give a man, and do it?

A. That is it, exactly.

Q. But you continued to run the department, of course?

A. Yes, sir.

Q. He had nothing to do with the manufacture of the engines?

A. No, sir.

Q. Well, then, it was simply, then, a matter of convenience, that he did not have enough work on the magneto to run a whole department by itself, and so Webster gave you to understand that whenever Milton wanted a little job done for this experimental work, to turn over the man and the machinery to him?

A. Yes, sir.

Q. And Munn, you say he was an assistant; did he do machine work himself?

A. I think he did, more or less. He worked right along on the magnetos.

Q. Well, with his hands?

A. Oh, yes.

Q. That is, making parts?

A. Yes, making parts. He was a machinist.

Q. Was he a machinist in your department?

A. Not in my department. You see, I was in the gasoline engine department, and the conveyor machinery was an entirely different department, run under a different head. Mr. Munn worked there for a number of years, and was finally taken from that department to work for Mr. Milton."

We have heretofore referred to the testimony of the draftsman, Kroeplin, who made the working drawings and the tracing from which the blue print of June 3, 1909, Defendant's Exhibit No. 21, was made, and who testified that he never received any instructions from anyone other than

Mr. Milton in respect to drawings connected with magneto work. On cross-examination, Mr. Kroeplin testified as follows (Rec., 682):

"Q. Do you mean to say it was only Milton's ideas which you embodied in all of these blue prints marked Defendant's Exhibits 17, 18, 19 and 21?

A. Yes, sir.

Q. Is that true of this Defendant's Exhibit 18, this double link machine?

A. I said that I made these three views on this drawing. This view was not made by me.

Q. Well, maybe I didn't make myself clear. Who originated, so far as you know, the double link scheme shown in this drawing?

A. Mr. Milton.

Q. Now, when was it that you made this Defendant's Exhibit No. 21 drawing, or, rather, the original tracing from which this is a blue print?

A. I did not make the complete tracing.

Q. Well, the part that you made, when did you do that?

A. Prior to the sixth month, third day, 1909. I cannot recall the date.

Q. How long before that?

A. I cannot recall.

Q. Well, was it within a week before that?

A. Oh, it must have been prior to that, months before that, because these details would not be traced for some time after the parts were made.

Q. That is, the parts of the machine, as I understand it, would be made first, and then after that a drawing such as this Exhibit 21 would be made, is that correct?

A. Yes, sir.

Q. So that you did the drawing after the machine had been made?

A. Parts of this tracing were made by me after the parts were made up.

Q. After the actual physical—

A. Parts."

Mr. Kroeplin also testifies (Rec., 680) to the fact that he accompanied Kane to Milwaukee when one of Mr. Mil-

ton's magnetos was being sent up there for test, Kane himself having testified to several of such trips, as heretofore pointed out. Mr. Kroeplin stated that he could not say positively "whether it was Mr. Milton or Mr. Webster who sent him to Milwaukee," but that at that time he was working under the direction of Mr. Milton.

Milton's testimony regarding the work which he personally did and directed on the magnetos was corroborated by the testimony of Mr. Anderson, at pages 683-684 of the record, which is brief and to the point and reads as follows:

> "Witness stated that he resided in Chicago, had retired from business and was not engaged in any occupation. Was foundry superintendent for Webster Manufacturing Company for 22 or 23 years prior to 1910, severing his connection with the company at the time it removed from Chicago to Tiffin, Ohio. Knew John L. Milton. Took orders from him in regard to magneto castings. Did not remember the exact time, but it was some time before the removal to Tiffin. No one gave witness orders to receive instructions from Mr. Milton regarding castings. Witness was one of the stockholders of the company and knew the capacity in which Mr. Milton was hired. It was as an expert gas engine man, hired to get up a magneto. Witness made castings in accordance with his instructions. Could not say definitely how many times, but perhaps twenty-five or fifty times. Witness was opposed to the making of the castings because they interfered with his other work, and so expressed himself to Mr. Milton. Witness thought he might be able to identify some of the castings he made for Mr. Milton. Was shown Exhibit 15 and then Exhibit 12, and said: 'Yes, these are very familiar. I think that—I am quite sure that—we made this, both this casting here and this. That is 15 and 12—that is the bracket on each of them.' Witness did not make any castings for magnetos except in accordance with instructions given to him by Mr. Milton, and never heard of anybody by the name Kane while witness in the employ of the Webster Company. Witness knew

> Mr. Munn but received no instructions from him regarding castings for magnetos. Asked if Mr. Milton bothered him a good deal about the castings, witness said: 'Oh, no. He would come down there perhaps just before the blast went on, or just before we started up, and coax us to get it in that day."

Exhibits 15 and 12 referred to by the witness as embodying bracket castings made by him for Mr. Milton are plaintiff's Exhibits of the unitary plug and bracket construction which Kane claims to have designed and which Munn claims to have made without any assistance from Milton and apparently without his knowledge! The witness did not know Kane, and never received any instructions about castings from Munn, or from anyone else except Milton. It would be interesting to know where Munn got his casting for Kane's first magneto, which he built, according to his testimony, without Milton's knowledge.

Kane's story, starting with his alleged sketch of the Sunday afternoon, was artfully prepared, but, like all such stories, it will not stand careful analysis and investigation. He contradicts himself, as we have seen, and various parts of his story are wholly inconsistent with established facts. He is squarely contradicted on important matters by some others of plaintiff's own witnesses, notably Mr. Webster, as well as by defendants' witnesses. His story, on the face of it, is incredible, and the record demonstrates its falsity. He has not only failed to sustain the burden of proof that was upon him, as the later applicant and patentee, but he has not even produced a preponderance of evidence in his favor.

We submit, therefore, that plaintiff was right in originally and for years recognizing Milton as the inventor or originator of the subject matter in controversy, in holding him out as the inventor of it, in marking its product patented with the date of his patent, in asserting it against infringers, and in wholly ignoring any claim of Kane's, or apparently having any idea that he had one. It did all of

this with full knowledge of every fact on which it now relies to destroy Milton's patent and discredit him as the originator of the subject matter in question, and to establish Kane in his place for the purpose of extending in time and broadening in scope the monopoly which it held under Milton's patent. It is too late for plaintiff to make this entire change of position for its own profit and to the prejudice of the public in general and defendant-appellant in particular, even if there were much more evidence than there is to support it. It should be held to its original claim to the invention through Milton, and its belated claim to it through Kane should be rejected.

CHAPTER D.

The Manning-Van Deventer Letter.

Much stress was laid by the plaintiff-petitioner, throughout the progress of the trial below and in the argument on appeal, upon a letter written by Mr. Manning to Mr. Van Deventer, in relation to the prospective or possible acquisition of the patents and rights of the Podlesaks by the Splitdorf and Sumter Companies. While this matter was entirely disposed of by the Court of Appeals in its decision (p. 72 main portion of brief) and no mention has been made thereof since that decision—either on the petition for re-hearing or in the petition for writ of certiorari, it would seem advisable for defendants to devote some time to a discussion thereof. This letter, which was much exploited by the plaintiff, in its opening statement of its case and later (Rec., 478, 499), will be found at pages 242-244 and again at pages 305-307 of the Vol. II., where it forms a part of the depositions of Mr. Manning and Mr. Van Deventer taken prior to the trial of the present case in a suit of *Emil Podlesak* v. *Webster Electric Company* in the Eastern District of Wisconsin, said depositions having been introduced into the record of the present case by plaintiff as its Exhibits Nos. 81 and 82. (Vol. II., pp. 153, 274). At the

time the letter in question was written (August 10, 1915) Mr. Manning was vice-president and secretary of the Sumter Electrical Company, of Sumter, South Carolina, but residing and representing it at Chicago, while Mr. Van Deventer was treasurer and general manager of the Sumter Company, and located at Sumter.

As appears from the letter itself, Mr. Manning had recently had an interview with Mr. Henry J. Podlesak at which Mr. Podlesak told him of his and his brother's relations and contracts with the Webster Company and stated that they were free to manufacture their magnetos themselves and to transfer their patents with the right of manufacture to others, in view of which Mr. Manning said to Mr. Van Deventer that if their company could secure the Podlesaks' rights it "would let us right into the Webster business, and with their line and plug oscillator we sure would be in shape to command the field." This latter statement constitutes the gravamen of the letter, as we understand plaintiff's view and that of the court below, but it seems to us a harmless and immaterial statement which should not have been allowed to prejudice the defendant in the pending litigation in any way whatsoever. If it was a fact that the Podlesaks' contracts with the Webster Company were such as to leave the Podlesaks free to manufacture the same magnetos which the Webster Company was manufacturing under the contracts, and if the Podlesaks had the right to assign such contracts and right to manufacture to another, certainly no just criticism could be offered of anyone who acquired such rights and proceeded to manufacture such magnetos. As a matter of fact, however, the Podlesak's contracts with the Webster Company gave them no right to either themselves manufacture, or to assign to others the right to manufacture, the particular type of magneto which the Webster Company was manufacturing under such contracts, for the contract, Exhibit C, gave the Webster Company the *exclusive* right to use the inventions covered by the patents mentioned in that contract, and those patents covered broadly the so-called "Tri-

Polar" type of magneto which the Webster Company was then manufacturing under the contracts, and which it has ever since continued to manufacture, and which it has exploited in its catalogues and advertising matter as the distinguishing feature of its magnetos. (See copies of plaintiff's catalogues in evidence, and the fifteen samples of its advertising matter offered in evidence, collectively, as Defendant's Exhibit No. 70). Neither the Splitdorf Company nor the Sumter Company has ever manufactured a tri-polar magneto of any kind, nor in any other way copied or imitated the design of plaintiff's magnetos. There is not the slightest evidence in the record, and we believe no claim on the part of plaintiff, that the defendants have been guilty of any unfair competition in that respect, the sole complaint being that the Splitdorf and Sumter companies acquired the rights of the Podlesaks (whatever they were) with a full and express recognition of all the rights of the Webster Company under the latter's contracts with the Podlesaks, and proceeded to exercise the rights so acquired (whatever they are) in a perfectly fair, businesslike and legal manner.

Plaintiff, in its voluminous and frequently revised and amended pleadings in this case, has characterized the Podlesaks' sale and assignment of their patents and contract rights to the Splitdorf and Sumter companies, subject to all of the rights of plaintiff, as an outrageous and actionable "conspiracy" against plaintiff, but in view of the actual facts and the legal rights of the parties, and the full recognition of such rights throughout the transaction, such charges would seem puerile, and made solely for the purpose of endeavoring to prejudice the mind of the court against the defendant—an effort which appears to have been successful in the court below, for in no other way can we account for its conclusions.

Mr. Manning was called as a witness by the plaintiff and examined at length respecting the letter in question. With regard to what he meant by his reference to "Webster's latest move" he testified as follows (Rec., 479):

"Q. Now, what was the latest move, Mr. Manning, that is referred to in that letter? What did you mean when you wrote that?

(Objection; overruled).

A. There was a move that was made at Newark, when you and Mr. Brown went down to Newark and told the general manager of the Splitdorf Company that you had certain patents that would dominate the Dixie high tension magneto principle, and that you were going to push, or sue them for infringement, or something of the sort, if they did not insist on my getting out of this stationary engine field up here, to which the Webster Company were developing some business, in connection with their Webster oscillator; and I did not like the idea of feeling that I should be ejected from that field, when I knew I had a perfect right to work in it, and I had spent a good many more years than anybody else in the stationary engine ignition field, in developing magneto ignition for those engines, and I did not see what right you would have in going down there and making a threat like that, with Mr. Curtis, and trying to throw me out of this stationary engine ignition field, when we had certainly, as I understood, a perfect right to sell and manufacture and prosecute all the business we could in that particular line."

With respect to what he meant by letting his company "into the Webster business," he testified at page 489 of the record as follows:

"Q. When in this letter you say that 'H. J. and Emil will be in the frame of mind to consider such negotiations with us as would let us right into the Webster business,' what did you mean by letting yourselves right into the Webster business?

A. Well, I meant that if we bought any rights which they had under the machine, that Mr. Podlesak showed me and which he was preparing to manufacture, that in addition to our line of oscillators it would give us the right also to manufacture a Podlesak bracket like he showed me, a magneto known as the Sylvan, as he called it, and that that magneto

was very similar to the Webster magneto; and that we would then not only have the right to manufacture the plug oscillator to ourselves but the other type of machine as well, if not the tri-polar magneto as Mr. Podlesak had explained to me that Mr. Webster had the exclusive license on it.

Q. When you referred to letting yourselves into the Webster business, you were referring, as I see it, to yourselves?

A. As I said—

Q. Just a minute. When you say here that—When you refer to letting yourselves into the Webster business, I understand you now to say that you meant this Sylvan machine which the Podlesaks had gotten up, which he showed to you.

A. I simply mean this, Mr. Williams: It would let us into the field which they were occupying with another type of magneto than our own; we had the plug oscillating magneto with the springs in the bracket, and using the rotary type on the bracket so that we made an oscillator, and things of that kind. If we had the Sylvan machine, we would then be in position also to have a machine that would be of a different type from the plug oscillator we had with the springs on the bracket of the magneto—I mean, on the plug itself. But I should have said there—I mean, I could have expressed my meaning, I think, more clearly had I said the Webster field rather than the Webster business.

Q. That is, you could let yourselves right into the Webster field?

A. Yes, in the field. You know, those are terms that are used by salesmen very often without considering their technical significance,—As meaning class of trade that they were handling, the stationary engine field.

Q. And it was in your mind that you could go into that field or that line of business with this Sylvan machine, with the plug or oscillator? That is, that the Sylvan machine would put you in position to cater to that trade?

A. We were already catering to that trade; we were handling it very satisfactorily. But our machine was different entirely from the Webster machine,

and if, for any reason, we wanted to manufacture both types of machine, why, we would then be in position to do so. But as a manufacturer, I naturally would not want to manufacture two types of any model that one type would handle, because we understand in a manufacturing business you want a large production in as few models as possible.

Q. Do you mean to say that your plug oscillator would fill the same market exactly as the Webster machine if you had seen fit to use it for that purpose?

A. It was already filling a field which was in competition with the Webster machine, selling to the same customers for use on the same machines.

The Court: That is, salable to them for the same purpose?

The Witness: It would be salable to any manufacturer of stationary engines just as the Webster machine and as any other magnetos are interchangeable.

Mr. Williams: Q. So that where you referred here to letting yourselves right into the Webster business, you mean letting yourselves into the same market?

A. Yes.

Q. Putting yourselves in the same market?

A. Yes. In other words, with a different type than we already had.

Q. So that you would have the two types to cater to the same market?

A. Exactly so."

In reference to what he said in the letter about keeping the Podlesaks themselves out of the field, he testified at page 483 as follows:

"Q. Now, in this letter you said, 'I think I have scared H. J. pretty well out of the idea of manufacturing his own new machine.' What machine was referred to there?

A. He showed me an oscillating magneto, on which there was a magneto, and he called it 'Sylvan,' I think; and he said that that was the machine that he and his brother were preparing to manufacture,

and I was very anxious to eliminate that additional competition in that field, and as Mr. Podlesak told me that he was making arrangements to go into the manufacture of this line of oscillating magnetos, and as I realized that would be another competitor in that field, I was particularly anxious to get rid of the Podlesak brothers' competition. Later it was agreed that they would stay out of that field entirely for a number of years."

And further, on the following page:

"Q. What did you tell Podlesak about the size or strength of the organization?

A. I do not remember now any of the conversation, but I know that was the impression that I was endeavoring to create, because I wanted to keep him out of that field. As it was, there was the Webster Chicago Company, and ourselves,—the Webster Company manufacturing the Webster oscillator magneto, and the Sumter Company manufacturing the plug oscillator, as we called it; and we had the so-called Van Deventer machine, with the springs mounted on the bracket, and using a different type of magneto from the Webster machine; and I always did feel that if we could secure these rights from the Podlesaks, which I understood they had, which gave them the right to manufacture a machine similar to Webster, that, as I stated later in the letter, if Mr. Brown got too obstreperous, he wanted to eject me entirely from this field, that I would then be in position to manufacture, in addition to the plug oscillator, a machine similar to the Webster, without using a different magneto,—as I think I understood from Mr. Podlesak that the Webster Company had an exclusive license on the tri-polar magneto, and of course I could not see anything wrong in going ahead with those negotiations, because they owned the patents, and they told me that their rights would be clearly set forth in the agreements which they had with the Webster Company, and which of course our lawyers could see whenever it was necessary."

As will be noted, Mr. Manning repeatedly says that Mr. Podlesak told him that the Webster Company had an *exclusive* license under the Podlesak tri-polar patents, and that he therefore had no idea of using that feature of the Webster's Company's magneto. Again, on page 491 he says:

> "Mr. Podlesak had made it very clear to me that he could not manufacture the Webster machine."

As will also be noted, Mr. Manning said in one of his foregoing answers:

> "I could not see anything wrong in going ahead with those negotiations, because they (the Podlesaks) owned the patents, and they told me that their rights would be clearly set forth in the agreements which they had with the Webster Company, and which of course our lawyers could see whenever it was necessary."

Those agreements were submitted to Mr. Manning's company and its lawyers, and when their contract of purchase of the Podlesak patents and rights was drawn up those agreements were expressly referred to and recognized, and the whole transaction was perfectly straight and clean. The contracts showed exactly what the rights of the parties were, there was no misrepresentation by anyone, the Splitdorf and Sumter Companies acquired all of the rights of the Podlesaks, and the defendant is here resting on those rights. Mr. Manning could see nothing wrong in the transaction, nor can we.

Mr. Manning and Mr. Van Deventer were both called as witnesses by the Webster Company in the suit in the Eastern District of Wisconsin heretofore referred to, and examined, or rather cross-examined, as if they were a pair of thieves and pirates by the Webster Company's counsel in that case. We can hardly expect the court to read these lengthy depositions, notwithstanding plaintiff has injected them into the present case, but we very much wish that it

might read them and contrast the evident character and disposition of the witnesses with that of examining counsel. We feel sure that nothing more could be needed to satisfy the court of the honesty and integrity and high character of these two representatives of the defendant companies, charged with the alleged "conspiracy" against the plaintiff.

Instead of the equities of the case being with the plaintiff, because of the Manning-Van Deventer letter and any of the matters to which it relates, we submit that they are altogether with the defendants; that the plaintiff has no ground whatever for criticising or complaining of the sale and transfer of the Podlesaks' patents and rights to the defendant company; and that its own conduct, in respect to the Kane-Milton and Kane-Podlesak interferences and its prosecution of the Kane application represents an unconscionable effort on its part to over-reach the defendants and the public as well, in violation not only of all moral right but of well established legal principles.